THE DOMINION FITTER





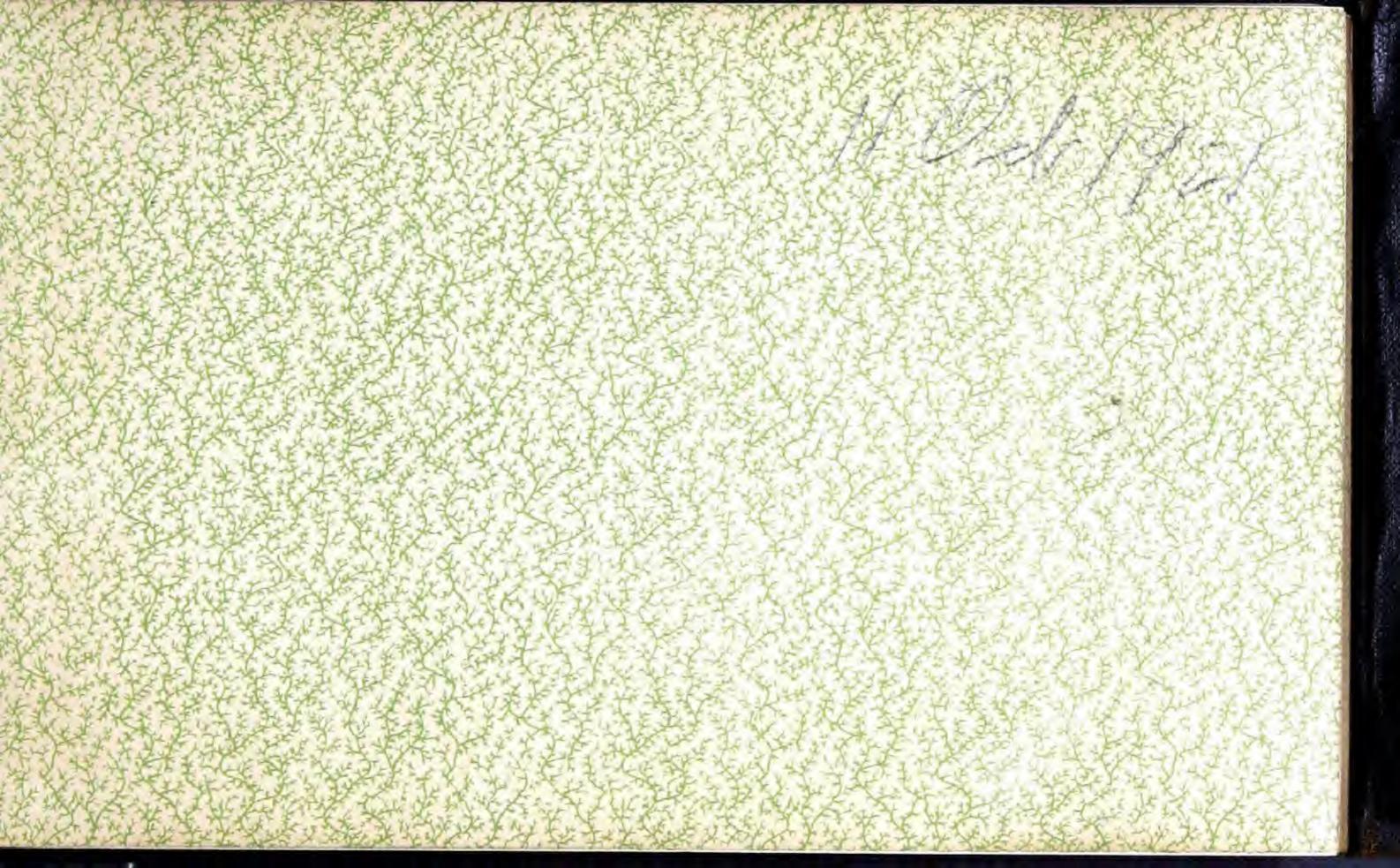
TORONTO

St John Montreal Hamilton Winnipeg Calgary Vancouver





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THE DOMINION FITTER



THE

DOMINION RADIATOR COMPANY

St. John

Montreal

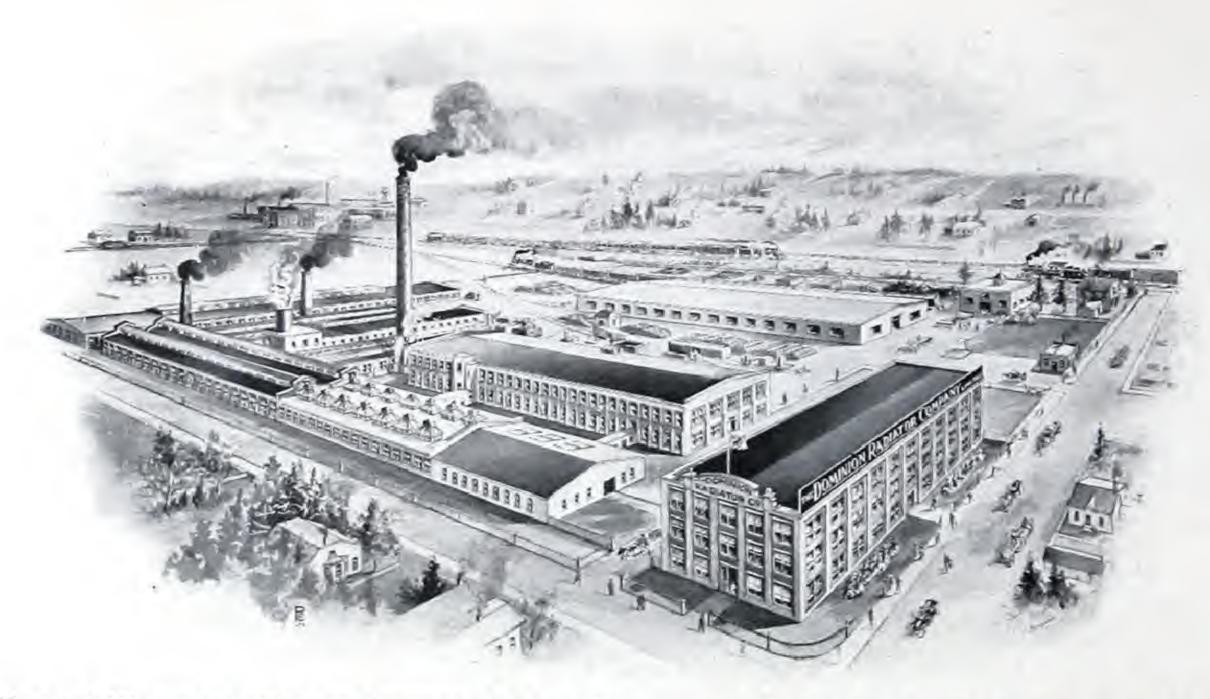
Hamilton

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Winnipeg

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Head Office and Works: Corner of Van Horne and Dufferin Streets, Toronto, Ont.
Branches at: St. John, Montreal, Hamilton, Winnipeg, Calgary, Vancouver.

FOREWORD

In presenting our Dominion "FITTER" to the Architects, Heating Engineers and General Trade, we desire to express our appreciation for the liberal patronage which has been bestowed upon us in the past.

Three new series of heating boilers are herein catalogued for the first time, viz:-

Safford MOGUL Round Hot Water Boilers,

Safford MAGAZINE Self-feed Down-draft Boilers,

Safford SQUARE-POT Sectional Boilers.

These new lines are offered only after the most rigid tests have assured us of their worth, and we are confident

that they will equally merit your good will and support.

In this Dominion "FITTER" we have endeavored to set out in plain and logical sequence, information as to sizes, capacities and data pertaining to Boilers, Radiators and Specialties required by the Architects, Engineers and Steamfitters for their prompt and accurate making of specifications and calculations.

Our quarter of a century specializing in the manufacture of heating apparatus, combined with our immense new plant equipped with the latest modern machinery enable us to offer values in boilers and radiators, which for uniformity, finish, neatness of design, durability and efficiency are the recognized standard throughout the Dominion.

A feature which will appeal to the Architects, Heating Engineers and Trade in general is the system adopted by us in grouping the respective Radiator designs as manufactured by us under one trade name, which will simplify the writing out of specifications, viz.:—

SAXON Applies to Plain round top;

VICTORIA..... Applies to Ornamental square top:

REGINA..... Applies to Plain square top.

When writing specifications all that is required in addition to mentioning the trade name is the number of column of radiator, namely: One, two, three, or four column.

The same idea is expressed in the Wall Radiation:

ONTARIO..... Applies to the Plain pattern;

PRINCESS. Applies to the Ornamental pattern;

STANDARD Applies to the Plain (new design).

This idea is one that should meet with entire approval.

We respectfully solicit your correspondence in respect to any of the lines we manufacture or handle. Prompt attention will be given to any communications received.

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Branch Headers	Gauge Glasses
Bronzes	Gauges, Altitude, Pressure, Steam, Vacuum
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NOTICE

The lists, ratings and data in this catalogue are revised and corrected to date, superseding all former lists, and are subject to change without notice. All former editions of our catalogue should be destroyed.

Conditions of Sale

Our goods are guaranteed only to the extent of furnishing new parts for any found defective in manufacture.

No claim will be allowed unless presented within 60 days after receipt of goods.

Return of Goods

Goods must not be returned except by special permission, and when so returned will be subject to discount.

Special Notice

All goods are shipped at buyers' risk, therefore, if you give the Transportation Company a clean receipt for damaged goods, or for shipment upon which there are shortages, you do so at your own risk. We are not responsible for goods broken in transit; our responsibility ceases with the Transportation Company's receipt. Broken goods should be refused, or full description of breakage made by Agent, or Transportation Company on expense bill. The paid freight bill, with notation made upon same, is necessary for claim against Transportation Company. We will render any aid possible to assist purchaser in collecting his claim from Transportation Company, but deductions will not be allowed to purchaser on his account with us therefor.

THE



RATINGS

GENERAL RATING CONDITIONS

- 1. The ratings of our water boilers are based on a temperature of 180° in the water at the boiler, and of our steam boilers on a standard of two pounds pressure at the boiler, for a period of eight hours on one charging of fuel, during which time only 80% of it is consumed, leaving a balance of 20% for a rekindling reserve.
- 2. To maintain a temperature of 70 degrees in all rooms warmed under these conditions, it is assumed that all of the apparatus shall be properly installed and the radiating surface and boiler capacity adequate.
- 3. Our ratings apply to cast-iron direct radiators operating on a normal installation of piping. When **Direct-Indirect** radiation is used it is good practice to consider each foot of such surface equivalent to 1½ feet of direct radiation, and when **Indirect** radiation is used, as in a gravity system of ventilation, each foot of such surface equivalent to two feet of direct radiation, but when operating in conjunction with a Fan and Motor, as in hot-blast ventilation, each foot of **Indirect** surface is then equivalent to five square feet of direct radiation.
- 4. In all of our boilers into which a coil or water-back has been placed for heating water for domestic purposes, two feet of direct steam radiation, or three feet of direct water radiation should be figured for each gallon of capacity in the storage tank.

RATINGS-Continued

- 5. The ratings of all our boilers, excepting the Safford-Kewanee Boilers, are based on the use of anthracite coal.
 - 6. The ratings of our Safford-Kewanee Boilers are based on the use of "run of the mine" soft coal.
- 7. Our Safford Mogul and Safford Square-Pot Sectional Boilers will give excellent results using soft coal, and where it is intended to use bituminous, or soft coal continuously, it is good practice to add from 10 to 25% to the size of the boiler according to the heating value of the coal to be used.
 - 8. Safford Magazine Self-Feed Down-Draft Boilers give best results burning pea coal.
- 9. In finally determining the capacity of the boiler required for each and every installation, take into consideration the local conditions under which it is to operate.

GUARANTEES

The ratings of all types of Safford Boilers are conservative and absolutely reliable, but owing to the varying conditions surrounding installation, they are guaranteed only to the extent of furnishing new castings for any found defective in manufacture.

BOILER COVERINGS

We strongly advise that all our cast-iron boilers be covered with asbestos cement, or good insulating material, to the thickness of 1¼ inches. Steam boilers give best results when an air space is left between the covering and the boiler. The quantity of cement required will be found on pages 255, 256, 257.

BOILER TRIMMINGS

All trimmings furnished with our Steam Boilers are standard, and consist of Safety Valve, Steam Gauge, Try-Cocks, Water Column, Automatic Damper Regulator and Firing Tools, consisting of Poker, Scraper and Flue Brush.

Where Provincial or Municipal Regulations govern types of equipment to be furnished with Steam Boilers, or specifications for boilers should so state.

Water Boilers are supplied with Firing Tools only. When required Altitude Gauge and Thermometer will be furnished at an extra charge.

SAFFORD OGUND HOT-WATER BOILERS

SAFFORD MOGUL BOILERS ARE MADE IN 16 SIZES WITH CAPACITIES RANGING FROM 235 TO 2670 SQUARE FEET OF DIRECT RADIATION IN ADDITION TO MAINS

Information required for ordering Boilers and Boiler Repairs, see page 116

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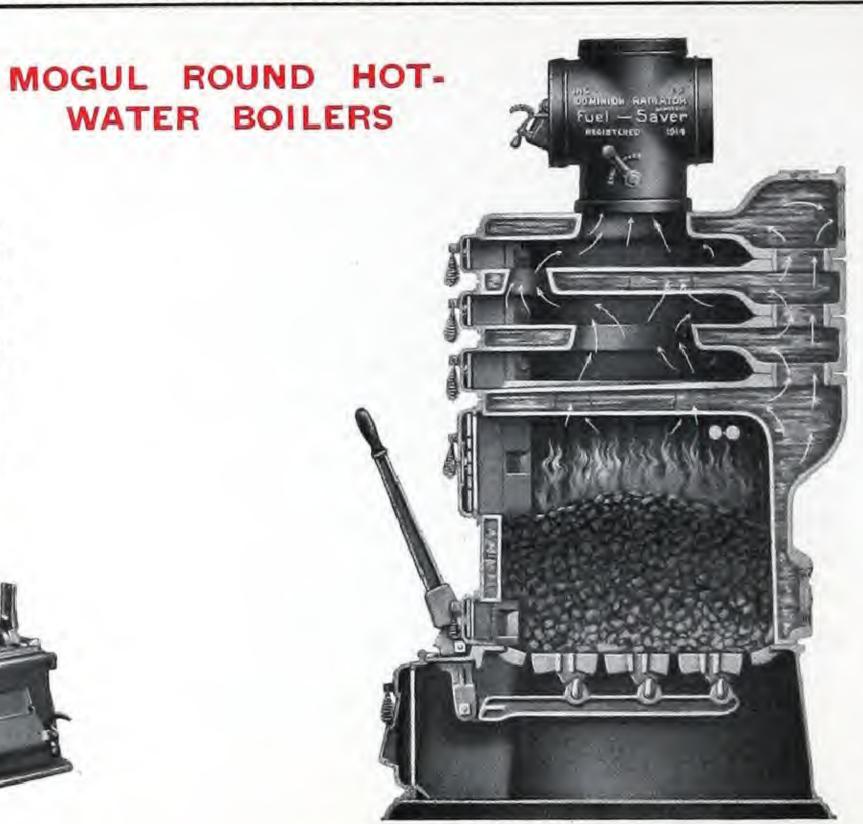
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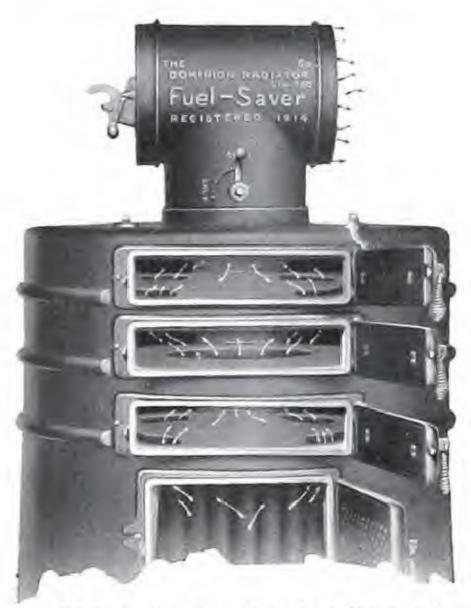


LOW BASE-General View

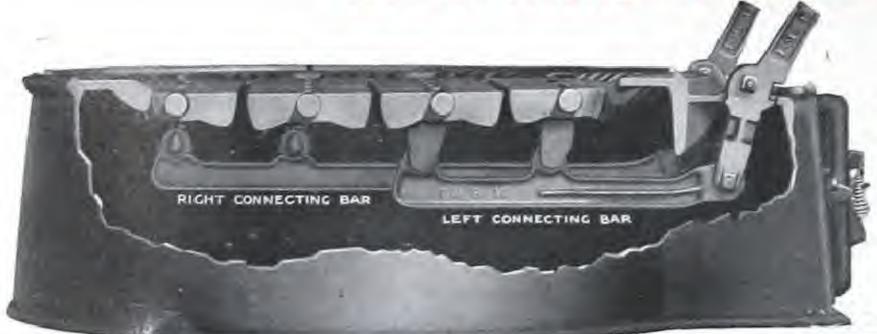


LOW BASE-Sectional View

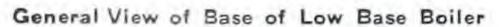
HIGH BASE-General View



Sectional View, showing Travel of Heated Gases



Sectional View, Showing Cotter-Pinless Grate
Bar Mechanism







General View of Base of High Base Boiler, showing how Grate Bars can be dumped right over



PUSH NIPPLE
Push Nipples are used to Connect
Section to Section



FIREPOT

The above Illustration shows the specially designed One-piece

Corrugated Firepot



SECTIONS

The Upper Section illustrates Outer Flue Section
The Lower Section illustrates Inner Flue Section



FUEL SAVER



MOGUL DOMESTIC HEATER LIST PRICES AND DATA



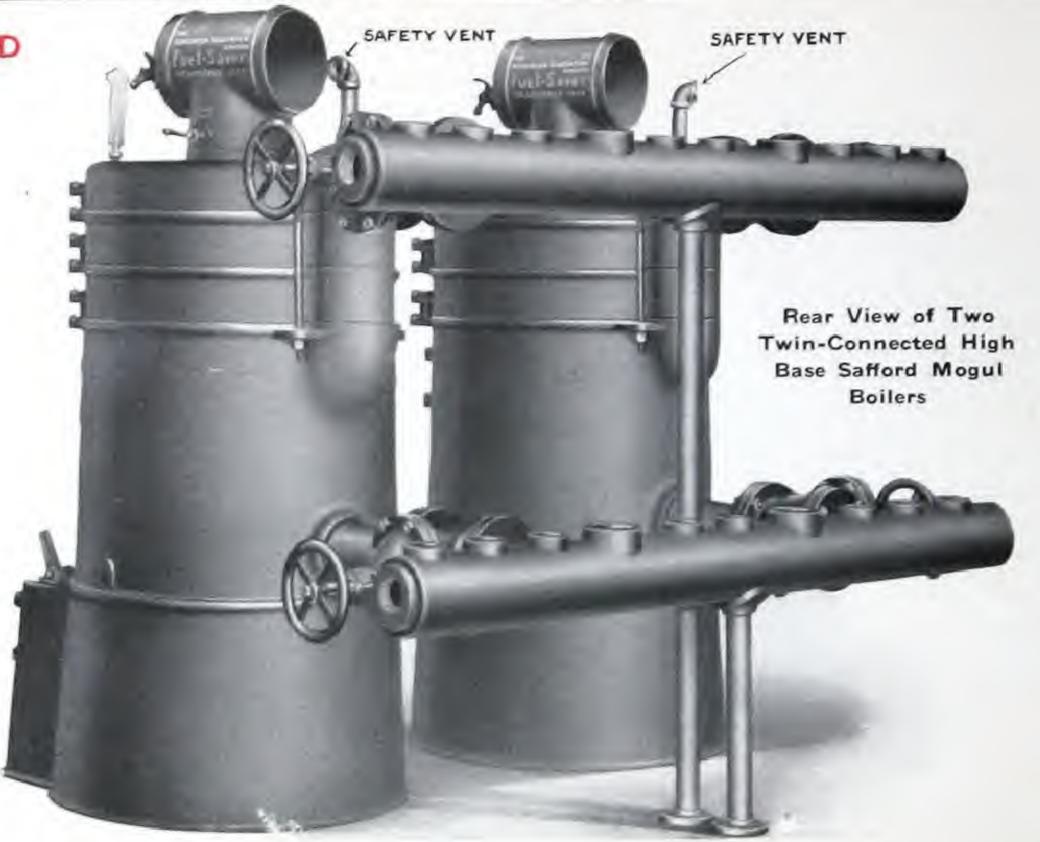
RE-CLEANING DOMESTIC HEATER

FUEL SAVERS

Number	1 to 4	5 to 6½	7 to 9
Particulars	For Boilers Nos. 1, 1½, 2, 2½, 3, 3½, 4	For Boilers Nos. 5, 5½, 6, 6½	For Boilers Nos. 7, 7½, 8,
List prices	\$3.00	\$3.50	\$4.00

DOMESTIC HEATERS

Name	Boiler Number	Distance c. to c. Opening	Size of Openings	Extreme Diameter Inches	Price List
Mogul	1 to 2 3 4 to 6 7 to 9	13/2 13/2 23/2 21/3	34 34 1	8½ 11½ 11½ 13½	\$2.00 2.00 3.75 4.80
Mogul Recleaning	1 to 31/2 4 to 9	$\frac{134}{232}$	1	4 41/2	2.00

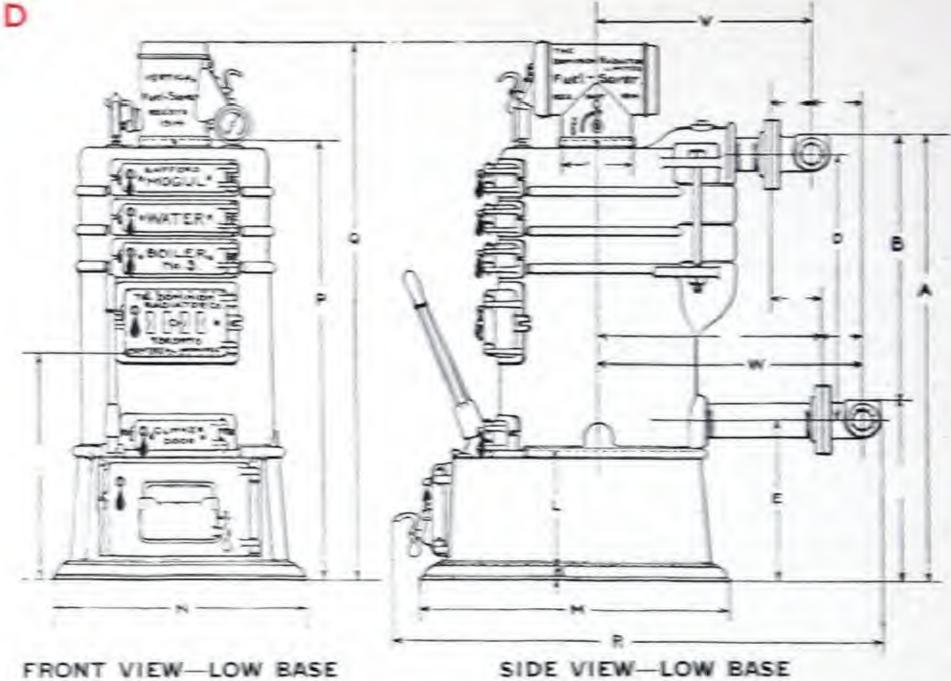


TEST

Each sectional part of the Safford **Mogul** Boiler is tested by a cold water test of 100 pounds to the square inch, and before the boiler is shipped from factory it is assembled and a second test applied of 100 pounds to the square inch. A thorough inspection is given to all castings, so that every practical precaution is exercised to avoid defects and to make this boiler satisfactory to the dealer and to his customer.

EASE OF HANDLING

The sectional parts of this boiler are of such dimensions as to be easily handled and carried through doorways or windows into basements. Owing to the ease with which the slip nipple joint can be made up, the parts of the boiler can be assembled and connected complete and ready for the piping in a few hours' time.



See Note on Ratings, Guarantee and Coverings, pages 7 and 8. Measurements, pages 19 to 21.

Where desired Safford Mogul Round Water Boilers Nos. 5-M to 9-M can be furnished with Special Headers

Laving 4-4 in. flow outlets and 4-4 in. return inlets. These Headers should be described on orders as "Western Headers."

For list prices, dimensions and capacities, see pages 19 to 21.

For amount of asbestos cement required to cover each size of boiler, see page 255.

LIST PRICES AND DATA

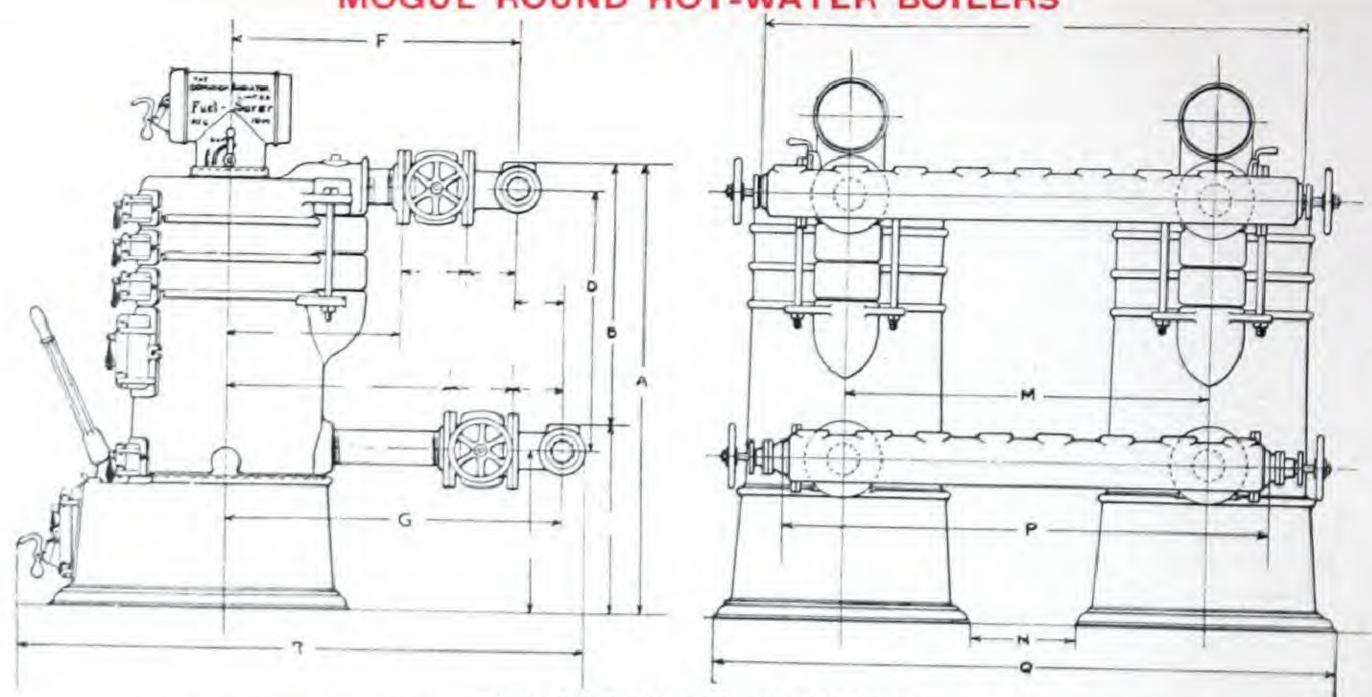
Information required for ordering Boilers and Boiler Repairs, see page 116

	List Price High Base	Radi- Capa Exelo of M Cast Iron Radi- ation	lineal	Low Base Only		Low Base Only	Low Base Only			Low base Only				ize of Connections oiler to Headers	Size of Barrel of Header	No, and Size of Openings on Return Headers. Boilers No. 3 to 9 to have one extra 2 in. opening on Return Header	lominal Diam.	Area of Grate Square Feet	Size of Smoke Outlet	Outside Diam. of Fire-Pot	Outside Depth of Fire-Pot		Dimer For Base	High		No. of Boiler	
			Sq. Ft.	reet	A	B-D	E	L	N	P	Q	R	V	W	N N	on o	N 52 6 6	Ž	4.00	SO	OX	ОЩ	A	E	L	Q	
1 ½-M 2 -N 2 ½-M 3 -M 3 ½-M 4 -N 5 -M 5 -M 6 ½-M 6 ½-M 7 -M	\$ 1105.00 1125.00 1140.00 1150.00 1160.00 1200.00 1240.00 1240.00 1270.00 1335.00 1392.00	131,00 147,00 157,00 170,00 190,00 235,00 235,00 280,00 280,00 360,00 420,00	270 335 400 500 570 670 750 835 935 1000 1250 1500	800 1000 1200 1500 1700 2000 2250 2500 2800 3000 3750 4500	48 445% 485% 4814 5234 511/2 56 5434 56 56 5634	27 ½ 31 ½ 30 34 ½ 33 37 ½ 34 ¾ 39 ¾ 35 ¾ 35 ¾ 35 ¾	1434 1434 1534 1534 16 16 171/2 171/2 171/2 181/4	11½ 11½ 11½ 12 12 12 12 13 13 13 13	2234 2434 2834 2834 3132 3132 3434 3434 39 4032 42	4634 4314 4714 47 5112 5012 55 5414 5514 5514 5534	57½ 55 59 59½ 64 64¾ 69¼ 73 70¾ 71¼ 71¼	50 51 51 54 54 56 56 56 62 62 65 66 69	211/2 221/2 221/2 241/4 241/2 263/4 263/4 281/4 29 301/2	29½ 29½ 31¾ 31¾ 33¼ 34 35½	3" 3" 4" 4" 5" 5" 6"	5"	5-2" 6-2" 7-2" 7-2" 8-2" 8-2" 8-2" 2-2½"	19 19 22 22 25 25 28 28 31 32 34		7 8 8 9 10 10 10 10 11 11 11	22 25 25 28 28 31 ¼ 31 ¼ 35 ¼ 37 ¼	18 18 ¹ / ₂ 20 20 23 23 24 24 25 25 ¹ / ₂	55 5158 5558 5534 5934 5832 62 67 6334 634	21 34 21 34 21 34 22 34 22 34 23 24 34 24 34 24 34 25 1/2	18½ 18½ 19 19 19 19 20¼ 20¼ 20¼ 20¼ 20¼	64 ½ 62 66 66 ½ 71 71 34 76 ¼ 75 ¼ 78 78 78 78 78 78 ½	1 -M 112-M 2 -M 212-M 3 -M 312-M 1 -M 112-M 5 -M 6 -M 612-M 7 -M
	1 425.00								42		7614		1	351/2	2.0	5"	8-2" 2-21/2"									15.0	7½-N
	I 475.00										72½ 82½			37 Sp'l	6"	6"	$\begin{array}{c} 6-2'' \\ 4-21/2'' \\ 2-3'' \\ 6-2'' \\ 4-21/2'' \\ 2-3'' \end{array}$	Sp'1	7.36 Sp'l								8 -M 9 -N

See Note on Ratings, Guarantee and Coverings, pages 7 and 8. Additional measurements, pages 20 and 21.

Where desired Safford Mogul Round Water Boilers Nos. 5-M to 9-M can be furnished with Special Headers having 4-4 in. flow outlets and 4-4 in. return inlets. These Headers should be described on orders as "Western Headers." Names and list prices of repair parts, see pages 22 to 27.

For amount of asbestos cement required to cover each size of Boiler, see page 255.



TWIN CONNECTIONS AND VALVES

No allowance will be made for ordinary Headers. See additional measurements, pages 18 to 21.

Allowance for Valves when not Required.

Nos. 1 -M to 3 \(\frac{1}{2}\)-M. \$4.00 each net

Nos. 5 -M to 6-M. \$5.00 each net

Nos. 7-M to 7 \(\frac{1}{2}\)-M. \$6.25 each net

Nos. 8-M to 9 -M. . 7.50 each net

Note - When a larger and smaller size Boiler are connected together, use list on Headers for larger size.

LIST PRICES AND DATA

Twin, Triple and Quadruple Connections

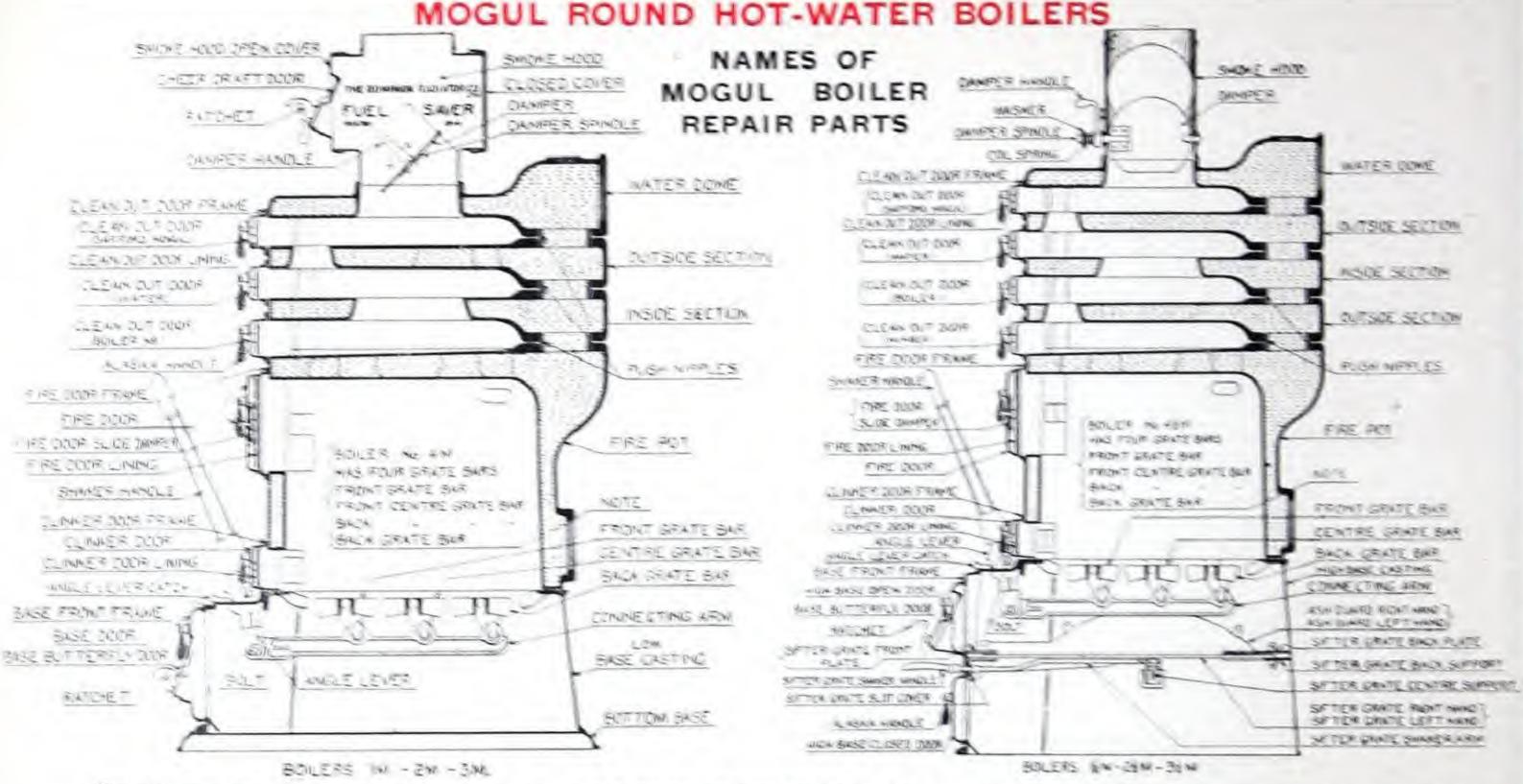
Ma		rice List		Insi	de Diar	neter	No	and C	Tana	Twin Connections Only									-	1
No. of Boiler		onnectic			f Head			3		No. and Low High Sizes of Base Base For Low and High Base Boilers				Base Boilers						
	Twin	Triple	Quad.	Twin	Triple	Quad.	Twin	Triple	Quad	Outlets Ins.	A	A	B-D	F	G	R	M	N	Q	Boiler
1 -M 1 1 ₂ -M 2 -M 2 1 ₂ -M 3 -M 3 1 ₂ -M 4 -M 4 1 ₂ -M 5 -M 5 -M 6 -M 6 1 ₂ -M 7 -M 7 1 ₂ -M 8 -M 9 -M	The second of th	160.00 160.00 160.00 160.00 160.00 200.00 200.00 200.00 300.00 300.00 350.00	220.00 220.00 220.00 220.00 220.00 270.00 270.00 350.00 380.00 380.00 460.00	4" 4" 4" 5" 5" 6" 6" 6" 8" 8"	5" 5" 5" 6" 6" 7" 7" 7" 9" 9"	6" 6" 6" 7" 7" 7" 8" 8" 9" 10" 10" 10"	4-3" 4-3" 4-3" 4-4" 4-4" 4-4" 4-5" 4-5" 4-5" 4-6" 4-6" 4-6"	6-3" 6-3" 6-3" 6-4" 6-4" 6-4" 6-5" 6-5" 6-5" 6-6" 6-6" 6-6" 6-6"	8-3" 8-3" 8-3" 8-4" 8-4" 8-4" 8-5" 8-5" 8-5" 8-6" 8-6" 8-6"	10-2" 12-2" 12-2" 16-2" 16-2" 20-2"	44 48 445% 485% 485% 5234 5152 56 5434 56 56 56 56 56 56 5752 SpT	55% 55¼ 59¾ 58½ 63 62 67 63¼ 64 69	3112 30 3412 33 3712 3434 3534 3534 3534 4038	30 32 ³ 4 32 ³ 4 33 ³ 4 37 ³ 4 40 40 ³ 4 43 ¹ / ₂ 43 ¹ / ₂	50½ 53	58 61 61 65 68 68 74 74 78 80 84	3414 3414 3414 3718 42 4612 4612 4912 5234 5234 5574	$11\frac{3}{4}$ $10\frac{1}{2}$ 9 $10\frac{3}{4}$ $10\frac{3}{4}$	57 59 59 66 66 73½ 81½ 81½ 88½ 90 95	41/2-N 5 -N 51/2-N

See Note on Ratings and Guarantee, pages 7 and 8. Additional measurements, pages 18 to 21.

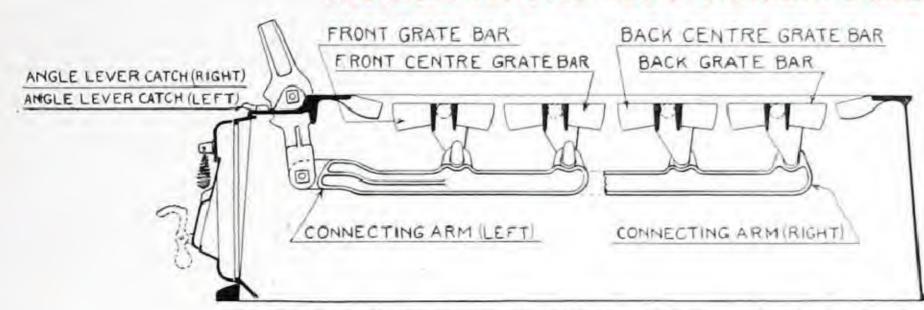
Where desired Safford Mogul Round Water Boilers Nos. 5-M to 9-M can be furnished with Special Headers having 4-4 in. flow outlets and 4-4 in. return inlets. These Headers should be described on orders as "Western Headers."

Names and list prices of repair parts, see pages 22 to 27.

For amount of asbestos cement required to cover each size of boiler, see page 255.

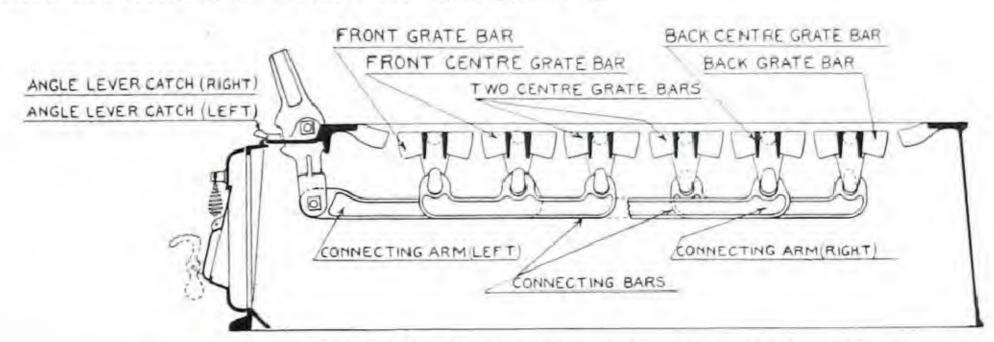


The shaking parts and grate bar parts of boilers 1M, 1½M, 2M, 2½M, 3M, 3½M, are named as in above illustrations. 4M, and 4½M have four grate bars instead of three, but the shaking parts are named as above. The shaking parts and grate bar parts of Boilers 5M to 9M are shown on page 23. Names and list prices of repair parts will be found on pages 22 to 27.



NAMES OF MOGUL BOILER REPAIR PARTS

GRATE BARS AND CONNECTING ARMS FOR BOILERS Nos 5M- 5M- 6M- 6M- 7M-7MM



GRATE BARS AND CONNECTING ARMS FOR BOILERS Nos. 8M-9M

Names and list prices of repair parts will be found on pages 22 to 27.

NAMES AND LIST PRICES OF MOGUL BOILER REPAIR PARTS

- Automotive to	1-1	M	2-N	1	3-N	1	4-M		5-M	
Name of Part	No. of Casting	List Price	No. of Casting	List Price	No. of Casting	List Price	No. of Casting	List Price	No. of Casting	List Price
LOW BASE										
Base Bottom	1-13	\$10.00	1-13	\$12.00	1-13	\$16.00	1-13	\$20.00		
Base Casting	2-13	16.00	2-13	22.00	2-13	28.00	2-13	31.00	2-13	\$43.00
ase Front Frame	3-13	1.40	3-13	1.40	3-13	1.50	3-13	1.50	3-13	2.20
ase Ash Door	4-13	1.60	4-13	1.60	4-13	1.70	4-13	1.70	4-13	0.05-0.00.75-0.00
ase Butterfly Door	5-13	. 50	5-13	.50	5-13	.60	5-13	.60	5-13	2.40
ront Grate Bar	S-17-101	1.75	S-19-101	2.25	S-22-101	2.75	S-25-101	3.00	S-28-101	.80
entre Grate Bar	S-17-102	2.25	S-19-102		S-22-102	3.70	5 20 101	5.00	5-26-101	3.50
ack Grate Bar	S-17-104	1.75	S-19-104		S-22-104	2.75	S-25-104	3.00	6 00 104	
ront Centre Grate Bar	C 11 101	1.70	3-13-104	2.20	5-22-104		S-25-104 S-25-102	(20, (4, (04, (4, 1))))	S-28-104	3.50
ack Centre Grate Bar			*****		*******	*********		3.70	S-28-102	5.2
onnecting Arm (left).	8-13	1.00	8-13	1 10	8-13	1.00	S-25-103	3.70	S-28-103	5.20
onnecting Arm (right).	0-10	1.00	0-10	1.10	0-10	1.00	8-13	1.30	8-13	1.00
onnecting Bar		0.00000000	*******		********	*******			8-13	1.30
ingle Lever	6-13	.80	6-13	60	6-13	000	0.10			
haker Handle	1-M7-13	1.00		.80		.80	6-13	.80	6-13	. 80
ire-pot	29-13		1-M7-13		1-M7-13	1.00	1-M7-13	1.00	24-17-98	1.00
ire Door Frame		50.00	29-13	60.00	29-13	75.00	29-13	95.00	29-13	120.00
ire Door	15-13	2.10	15-13	2.10	15-13	2.00	15-13	2.20	15-13	2.20
ire Door	16-13	1.30	16-13	1.30	16-13	1.30	16-14	1.50	4 & 5-16-14	1.50
	17-13	.20	17-13	. 20	17-13	.20	17-14	. 20	17-14	, 20
ire Door Lining	18-13	.80	18-13	.80	18-13	1.00	18-14	1.20	18-14	1.20
linker Door Frame	19-13	1.00	19-13	1.00	19-13	1.00	19-13	1.00	19-13	1.00
linker Door	20-13	.60	20-13	. 60	20-13	.40	20-13	.40	20-13	.40
linker Door Lining	21-13	.30	21-13	.30	21-13	.30	21-13	.30	21-13	.30
side Section	30-13	16.00	30-13	19.00	30-13	24.00	30-13	29.00	30-13	35.00
utside Section	31-13	17.00	31-13	20.00	31-13	25.00	31-13	30.00	31-13	38.00
ater Dome	32-13	17.00	32-13	19.00	32-13	25.00	32-13	32.00	32-13	40.00
lean-Out Door Frame.	22-13	1.40	22-13	1.40	22-13	1.70	22-13	1.70	22-13	2.00

NAMES AND LIST PRICES OF MOGUL BOILER REPAIR PARTS

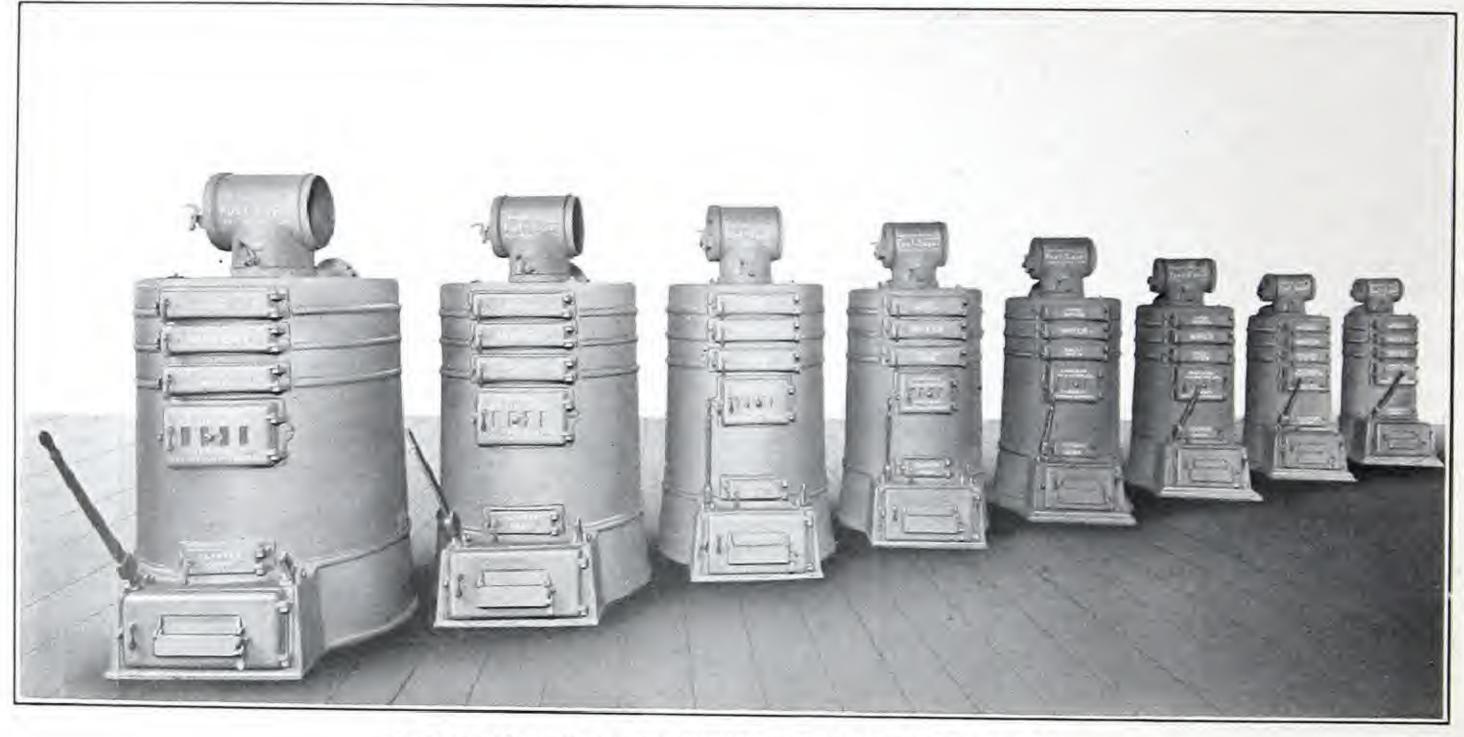
	6-N	1	61/2-1	M	7-M	1	8-1	1
Name of Part	No. of Casting	List Price	No. of Casting	List Price	No. of Casting	List Price	No. of Casting	List Price
LOW BASE								
Base Bottom		A. Charles	den conservation	and the state of the	The Laborator			
Base Casting	2-13	\$44.00	2-13	\$46.00	2-13	848 00	2-13	\$60.00
ase Front Frame	3-13	2.20	3-13	2.40	3-13	2.60	3-13	2.80
ase Ash Door	4-13	2.40	4-13	3.00	4-13	3.00	4-13	3.00
ase Butterfly Door	5-13	.80	5-13	.80	5-13	- 80	5-13	.80
ront Grate Bar	S-31-101	4.65	81/2-321/2-101	4.65	S-34-101	4.80	S-37-101	3.35
entre Grate Bar	* 14 . 1	******			CALL CONTRACTOR	Cara in Co	S-37-103	6.00
ack Grate Bar.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	S-31-104	4.65	S-32½-104	4.65	S-34-104	4.80	S-37-106	3.35
ront Centre Grate Bar	S-31-102	6.40	S-321/2-102	6.75	S-34-102	7.00	S-37-102	5.30
ack Centre Grate Bar	S-31-103	6.40	S-3212-103	6.75	S-34-103	7.00	S-37-102	5.30
onnecting Arm (left)	8-13	1.00	8-13	1.00	8-13	1.00	8-13	-80
onnecting Arm (right)	8-13	1.40	8-13	1.60	8-13	1.60	815-13	1.40
onnecting Bar	*******	STATES OF THE	elitabetare anno.	(TRATICAL)	deres, mars	I Sara arrange	8-13	80
ngle Lever	6-13	.80	6-13	.80	6-13	80	6-13	-80
haker Handle	24-17-98	1.00	24-17-98	1.00	24-17-98	1.70	24-17-98	1.70
ire-pot	29-13	150.00	29-15	165.00	29-13	180.00	29-13	200.00
ire Door Frame	15-14	2.40	15-14	2.40	15-14	2 40	15-14	2.40
ire Door	16-14	1.50	16-14	1.50	16-14	1.50	16-14	1.50
ire Door Slide Damper	17-14	.20	17-14	.20	17-14	. 20	17-14	.20
ire Door Lining	18-14	1.20	18-14	1.20	18-14	1.20	18-14	1.20
linker Door Frame	19-14	1.00	19-14	1.00	19-14	1:00	19-14	1.00
linker Door	20-14	-60	20-14	. 60	20-14	_60	20-14	. 60
inker Door Lining	21-14	.30	21-14	.30	21-14	30	21-14	.30
iside Section	30-13	47.00	30-15	52.00	30-13	56.00	30-14	64.00
utside Section	31-13	48.00	31-15	54.00	31-13	58.00	31-14	72.00
Vater Dome	32-13	48.00	32-15	58.00	32-13	65.00	32-14	74_00
Clean-Out Door Frame	22-13	2.00	22-15	2.00	22-14	2.00	22-14	2.00

NAMES AND LIST PRICES OF MOGUL BOILER REPAIR PARTS

Armina a R. A.	1-N	1	2-N	1	3-M		4-M		5-M	
Name of Part	No. of Casting	List Price	No. of Casting	List Price	No. of Casting	List Price	No. of Casting	List Price	No. of Casting	List Price
Check Lug, Left and Right HIGH BASE Base Casting	24-13 3 inch 25½-13 26-13 27-13 28-13 no number 26½-13 no number S-25-107	\$.70 .70 .70 .30 .30 4.60 .80 .30 .30 .10 .20 .15 .60 .10	33-13 34-13 35-13 24-13 3 inch 25½-13 26-13 27-13 28-13 no number 26½-13 no number S-25-107	\$.70 .70 .70 .30 .30 .5.40 .80 .40 .40 .10 .20 .15 .70 .10	33-13 34-13 35-13 24-13 4 inch 25½-13 26-13 27-13 28-13 no number 26½-13 no number S-25-107	\$.80 .80 .80 .40 .40 6.00 .80 .40 .20 .20 .15 .80 .10	33-13 34-13 35-13 24-13 4 inch 25½-13 26-13 27-13 28-13 no number 26½-13 no number S-25-107	1.30 .40 .60 .20 .20 .15 1.10 .10	33-13 168-9-14 35-13 164-9M-14 5 inch 25½-13 26-13 27-13 28-13 no number 26½-13 no number S-25-107 S-25-108	\$1.0 1.0 1.0 1.0 .5 .5 6.3 1.3 .4 .6 .2 .2 .2 .1 .1
Base Front Frame Base Ash (Closed) Door Base Ash (Open) Door Base Butterfly Door Ash Guard (Right Hand) Ash Guard (Left Hand) Sifter Grate (Right Hand) Sifter Grate (Left Hand) Sifter Grate (Centre Support) Sifter Grate Front Plate Sifter Grate Back Plate Sifter Grate Bottom Support Sifter Grate Shaker Arm Sifter Grate Handle Sifter Grate Shaker Arm Slide	37-14 39-14 38-14 5-13 43-14 44-14 41-14 42-14 46-14 51-14 50-14 49-14 45-14	3.40 1.20 1.20 .50 .60 .60 2.10 2.10 .80 .80 .80 .80 .20	37-14 39-14 38-14 5-13 43-14 44-14 41-14 42-14 46-14 51-14 50-14 49-14 48-14 47-14	3.40 1.20 1.20 .50 .80 .80 2.40 2.40 1.10 .80 .80 .80 .80	36-14 37-14 39-14 38-14 40-14 43-14 44-14 41-14 42-14 46-14 51-14 50-14 49-14 45-14 48-14 47-14	36.00 4.00 1.40 1.50 .50 1.10 1.10 2.90 2.90 1.20 1.20 1.20 1.20 1.20 1.20 1.20 1.20	36-14 37-14 39-14 38-14 40-14 43-14 41-14 41-14 41-14 46-14 51-14 51-14 49-14 48-14 48-14	44.00 4.00 1.40 1.50 .50 1.50 3.30 3.30 1.40 1.20 1.00 .80 1.20 .20 .20	36-14 37-14 39-14 38-14 5M-13 43-14 44-14 41-14 42-14 46-14 51-14 50-14 49-14 45-14 48-14 47-14	50.0 1.8 1.9 2.2 2.2 4.7 4.7 1.8 1.4 1.2 1.2 1.3

MOGUL ROUND HOT-WATER BOILERS NAMES AND LIST PRICES OF MOGUL BOILER REPAIR PARTS

	6-M		6½-M		7-M		8-M	
Name of Part	No. of Casting	List Price						
Clean-Out Door "Safford Mogul"	33-13	\$1.00	33-13	\$1.00	33-13	\$1.00	33-13	\$1.00
Clean-Out Door "Water"	168-9-14	1.00	168-9-14	1.00	168-9-14	1.00	168-9-14	1.00
Clean-Out Door "Boiler No."	35-13	1.00	35-13	1.00	35-13	1.00	35-13	1.00
Clean-Out Door Lining		.50	164-9M-14	. 50	164-9M-14	. 50	164-9M-14	. 50
Nipple		.50	5 inch	. 50	6 inch	.70	6 inch	. 70
Smoke-Hood (Combination)		8.20	251/2-13	8.20	251/2-13	8.20	251/2-13	10.00
Smoke-Hood Cover		1.40	26-13	1.40	26-13	1.40	26-13	1.80
Smoke-Hood Check Draft Door	27-13	. 60	27-13	.60	27-13	. 60	27-13	. 60
Smoke-Hood Damper	28-13	.80	28-13	.80	28-13	. 80	28-13	. 80
Spindle Plate for Handle	no number	.20	no number	. 20	no number	. 20	no number	. 20
Damper Handle	1100000	.20	44	. 20	11	. 20	a -	. 20
Coil Spring and Washer	13	.15	7.1	.15	11	. 15	0	. 15
Closed Cover for S. H	261/2-13	1.20	261/2-13	1.20	261/2-13	1.20	261/2-13	1.90
Ratchet	no number	.10	no number	.10	no number	.10	no number	. 10
	S-25-107 1	,10	S-25-107	.10	S-25-107	. 10	S-25-107	. 10
Check Lug, Left and Right	S-25-108	.10	S-25-108	.10	S-25-108	. 10	S-25-108	. 10
HIGH BASE					15000			
Base Casting	36-14	54.00	36-14	60.00	36-14	65.00	36-14	80.00
Base Front Frame	37-14	5.40	37-14	5.40	37-14	5.40	37-14	5.40
Base Ash (Closed) Door	39-14	1.80	39-14	2.20	39-14	2.30	39-14	2.30
Base Ash (Open) Door	38-14	1.90	38-14	2.10	38-14	2.20	38-14	2.20
Base Butterfly Door	5M-13	.70	5M-13	.70	5M-13	.70	5M-13	. 70
Ash Guard (Right Hand)	43-14	2.50	43-14	2.80	43-14	3.00	43-14	3.40
Ash Guard (Left Hand)	44-14	2.50	44-14	2.80	44-14	3.00	44-14	3.40
Sifter Grate (Right Hand)	41-14	5.00	41-14	5.20	41-14	5.50	41-14	6.60
Sifter Grate (Left Hand)	42-14	5.00	42-14	5.20	42-14	5.50	42-14	6.60
Sifter Grate (Centre Support)		2.00	46-14	2.10	46-14	2.20	46-14	2.40
Sifter Grate Front Plate	51-14	1.40	51-14	1.40	51-14	1.40	51-14	1.40
Sifter Grate Back Plate	50-14	1,20	50-14	1.30	50-14	1.30	50-14	1.30
Sifter Grate Bottom Support	49-14	1.20	49-14	1.30	49-14	1.40	49-14	1.40
Sifter Grate Shaker Arm	45-14	1.40	45-14	1.50	45-14	1.70	45-14	1.70
Sifter Grate Handle	48-14	.20	48-14	. 20	48-14	. 20	48-14	. 20
Sifter Grate Shaker Arm Slide	47-14	.20	47-14	. 20	47-14	. 20	47-14	. 20



THE MOGUL LINE OF ROUND HOT-WATER BOILERS

S A F F O R D ROUND STEAM BOILERS

SAFFORD ROUND STEAM BOILERS ARE MADE IN 18 SIZES, WITH CAPACITIES RANGING FROM 300 TO 1,650 SQUARE FEET OF RADIATION INCLUDING MAINS

Information required for ordering Boilers and Boiler repairs, see page 116

MANUFACTURED BY

THE

DOMINION RADIATOR COMPANY

St. John

Montreal

Hamilton

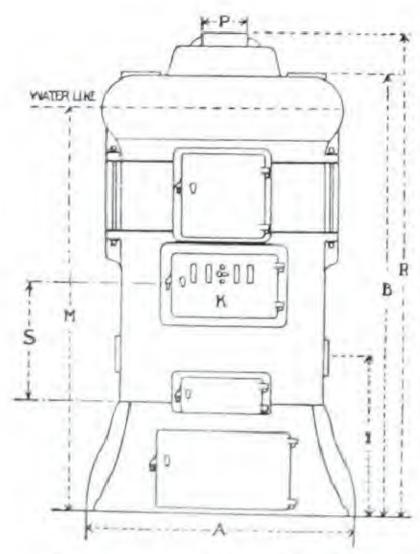
TORONTO

Winnipeg

Calgary

Vancouver

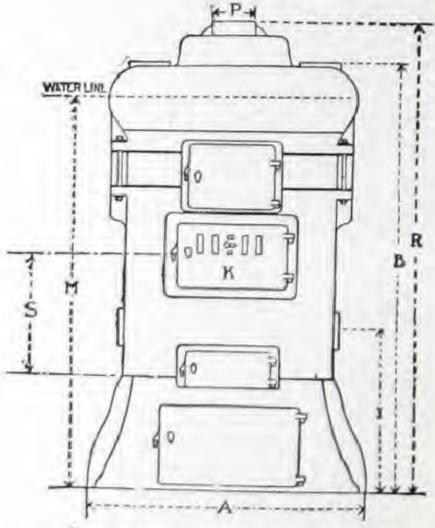
SAFFORD ROUND STEAM BOILERS



For measurements, see page 32.



NO. 6-28-S STEAM BOILER



For measurements, see page 32.

SAFFORD ROUND STEAM BOILERS

LIST PRICES AND DATA

Information required for ordering Boilers and Boiler Repairs, see page 116

No.	List Price	Gross Rating Square Feet	Gross Rating Lineal Feet 1" Pipe	Diameter of Grate Inches	Height to Top Outlet Inches	Height to Centre of Return Inches	Height of Water Line Inches	Outlets, Number and Size	Inlets, Number and Size	Size of Smoke Pipe Inches	Approx. Shipp'g Weight Lbs.	No.
4-19-S 5-19-S 6-19-S 4-22-S 5-22-S 6-22-S 4-25-S 6-25-S 6-25-S 4-28-S 6-28-S 6-28-S 4-31-S 6-31-S 6-31-S 6-31-S 6-31-S	\$205.00 215.00 235.00 255.00 295.00 312.50 295.00 325.00 325.00 400.00 400.00 425.00 450.00 500.00 525.00 500.00 550.00	300 350 400 450 525 575 575 550 625 700 800 900 1000 1100 1275 1400 1300 1500 1650	900 1050 1200 1350 1575 1725 1650 1875 2100 2400 2700 3000 3300 3825 4200 3900 4500 4950	19 19 19 22 22 22 25 25 25 28 28 28 31 31 31 34 34	5232 57 6158 54 5834 5558 6034 6558 6758 6758 6758 6758 67758	1434 1434 1434 1534 1534 1634 1634 1638 1638 1638 1634 1634 1634 1634	451/2 50 545/4 47 511/2 561/4 475/8 521/2 575/8 491/4 501/2 51 561/4 613/8 52 571/2 631/8	1-215" 1-212" 1-212" 1-31" 1-3" 1-3" 1-312" 1-4" 1-4" 1-4" 1-4" 1-4" 1-4" 1-5" 1-5" 1-5"	2-21/2" 2-21/2" 2-21/2" 2-3" 2-3" 2-3" 2-3 (2") 2-3 (2") 2-4" 2-4" 2-4" 2-4" 2-4" 2-5" 2-5"	8 8 9 9 9 9 9 9 9 10 10 10 10 10 11 11	1000 1150 1300 1350 1450 1625 1575 1700 1900 2125 2400 2450 2675 2550 2775 3100	4-19-5 5-19-5 6-19-8 4-22-5 5-22-8 6-22-8 4-25-8 5-25-8 6-25-8 4-28-8 5-28-8 6-28-8 4-31-8 5-31-8 6-31-8 6-34-8 6-34-8

See Note on Ratings and Guarantee, pages 7 and 8. Additional measurements, page 32. Flow and return mains to be included in determining capacity of boiler required. For amount of asbestos cement required to cover each size of boiler, see page 255.

SAFFORD ROUND STEAM BOILERS

Mieasurements are in Inches

No.	G	В	I	К	М	P	R	S	V	No.
4-19-S 5-19-S 6-19-S	$26\frac{5}{8}$ $26\frac{5}{8}$ $26\frac{5}{8}$	$5212 \\ 57 \\ 615 \\ 8$	$\begin{array}{c} 14\frac{3}{4} \\ 14\frac{3}{4} \\ 14\frac{3}{4} \end{array}$	8½x11¾ 8½x11¾ 8½x11¾	$45\frac{1}{2}$ 50 $54\frac{5}{8}$	8 8 8	595/8 641/8 683/4	1578 1578 1578	24 1/8 24 1/8 24 1/8	4-19-S 5-19-S 6-19-S
4-22-S 5-22-S 6-22-S	$30\frac{1}{4}$ $30\frac{1}{4}$ $30\frac{1}{4}$	54 58½ 63¼	$\begin{array}{c} 153_4 \\ 153_4 \\ 153_4 \end{array}$	9 x1334 9 x1334 9 x1334	$\frac{47}{5112}$ $\frac{5614}{4}$	9 9 9	$\begin{array}{c} 62\frac{1}{4} \\ 66\frac{3}{4} \\ 71\frac{1}{2} \end{array}$	$\begin{array}{c} 1634 \\ 1634 \\ 1634 \end{array}$	$\begin{array}{r} 27\frac{17}{32} \\ 27\frac{17}{32} \\ 27\frac{17}{32} \end{array}$	4-22-S 5-22-S 6-22-S
4-25-S 5-25-S 6-25-S	32 15 32 15 32 15	$55\frac{5}{8}$ $60\frac{1}{4}$ $65\frac{3}{8}$	$16\frac{1}{4}$ $16\frac{1}{4}$ $16\frac{1}{4}$	9 x13½ 9 x13¼ 9 x13¼	$47\frac{7}{8}$ $52\frac{1}{2}$ $57\frac{5}{8}$	9 9 9	633/ ₈ 68 731/ ₈	$\begin{array}{c} 17\frac{1}{2} \\ 17\frac{1}{2} \\ 17\frac{1}{2} \end{array}$	$30\frac{1}{8}$ $30\frac{1}{8}$ $30\frac{1}{8}$	4-25-S 5-25-S 6-25-S
4-28-S 5-28-S 6-28-S	$\frac{3615}{3615}$	575/8 625/8 675/8	$^{16\frac{3}{8}}_{16\frac{3}{8}}$	$9^{5} \% x18$ $9^{5} \% x18$ $9^{5} \% x18$	$\frac{4914}{5414}$ $\frac{5914}{2}$	10 10 10	665% 715% 767%	185/8 185/8 185/8	$34\frac{1}{16}$ $34\frac{1}{16}$ $34\frac{1}{16}$	4-28-S 5-28-S 6-28-S
4-31-S 5-31-S 6-31-S	$\frac{403}{403}$ 8 $\frac{403}{8}$ 8 $\frac{403}{8}$ 8	593 ₄ 65 703 ₈	$16\frac{1}{4}$ $16\frac{1}{4}$ $16\frac{1}{4}$	95%x18 95%x18 95%x18	$ 51 $ $ 56\frac{1}{4} $ $ 61\frac{5}{8} $	10 10 10	685/8 733/8 791/4	$\begin{array}{c} 19\frac{5}{16} \\ 19\frac{5}{16} \\ 19\frac{5}{16} \end{array}$	367/4 367/8 367/8	4-31-S 5-31-S 6-31-S
4-34-S 5-34-S 6-34-S	$\begin{array}{c} 45\frac{3}{16} \\ 45\frac{3}{16} \\ 45\frac{3}{16} \end{array}$	61½ 67 725%	17 17 17	956x18 956x18 956x18	$52 \\ 57 \frac{1}{2} \\ 63 \frac{1}{8}$	11 11 11	$\begin{array}{c} 71\frac{3}{4} \\ 76\frac{3}{4} \\ 82\frac{3}{8} \end{array}$	$\begin{array}{c} 19\frac{13}{16} \\ 19\frac{13}{16} \\ 19\frac{13}{16} \end{array}$	$\begin{array}{r} 39\frac{27}{32} \\ 39\frac{27}{32} \\ 39\frac{27}{32} \\ 39\frac{27}{32} \end{array}$	4-34-S 5-34-S 6-34-S

Safford Round Steam Boilers are so designed that any casting, whether round or square, may be taken through any door or opening which is not less than 2 feet 6 inches wide.

THE SAFFORD

SQUARE-POT

MADE IN TWENTY-THREE SIZES, IN BOTH STEAM AND HOT-WATER IN STEAM, VARYING FROM 800 SQUARE FEET TO 5,200 SQUARE FEET IN WATER, FROM 1,300 SQUARE FEET TO 8,575 SQUARE FEET

Information required for ordering Boilers and Boiler Repairs, see page 116

THE

MANUFACTURED BY

JOMINION RADIATOR COMPANY

St. John

Montreal

Hamilton

TORONTO

Winnipeg Calgary Vancouver



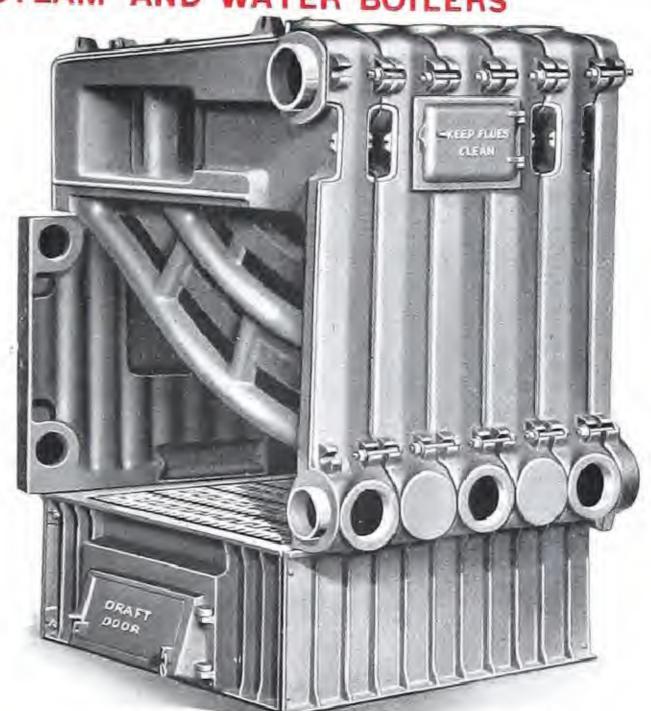
GENERAL VIEW SQUARE FOT STEAM SOILER Boilers starring with 370-T and up, have Two Fire Doors see once. 42



GENERAL VIEW SQUARE-POT WATER EDILER Seneral View Landwing Double Fire Door Square-Fot Bower, see page 42



View showing Internal Waterways, all tending upward toward the front



View showing Clean-out Doors and method of connecting sections

SAFFORD SQUARE-POT SECTIONAL STEAM BOILER

For Hard or Soft Coal, Wood or Natural Gas

LIST PRICES AND DATA

Information Required for Ordering Boilers and Boiler Repairs, see page 116

No.	List Price	Capacity Square Feet Direct Cast Radiation	Capacity 1 in. Pipe Lin. Ft.	Height to Top of Outlet	Size of Grate	Area Sq. Ft.	Height Water Line	Size of Flow and Return inches	Dimension See page 38	Size Smoke Pipe	No.
S-370-3	\$ 375.00	800	2400	591/2	37 x 20	5.14	491/2	1-4	22	9	S-370-3
5-371-3	425.00	1000	3000	5935	37 x 23	5.91	491/2	1-4	26	9	S-371-3
S-370-4	475.00	1200	3600	591/2	37 x 26	6.68	491/2	2-4	29	10	S-370-4
S-371-4	525.00	1400	4200	591/2	37 x 30	7.70	491/2	2-4	33	10	S-371-4
S-370-5	575.00	1600	4800	591/2	37 x 33	8.48	491/2	2-4	36	10	S-370-5
S - 371 - 5	625.00	1800	5400	591/2	37 x 36	9.25	491/2	2-4	39	10	S-371-5
5-370-6	675.00	2000	6000	591/2	37 x 39	10.00	491/2	2-4	42	12	S-370-6
5-371-6	725.00	2200	6600	591/2	37 x 43	12.04	491/2	3-4	46	12	S-371-6
S - 370 - 7	775.00	2400	7200	591/2	37 x 46	11.82	491/2	3-4	49	12	S-370-7
S-371-7	825.00	2600	7800	591/2	37 x 49	12 59	491/2	3-4	52	12	S-371-7
5-370-8	875.00	2800	8400	591/2	37 x 52	13.36	491/2	3-4	55	12	S-370-8
S-371-8	925.00	3000	9000	591/2	37×55	14.13	4912	3-4	58	12	S-371-8
5-370-9	975.00	3200	9600	591/2	37×59	15.16	491/2	3-4	62	12	S-370-9
5-371-9	1,025.00	3400	10200	59 1/2	37 x 62	15.93	491/2	3-4	65	12	S-371-9
5-370-10		3600	10800	59 1/2	37 x 65	16.70	491/2	4-4	68	12	S-370-1
	1,125.00	3800	11400	591/2	37×69	17.73	491/2	4-4	72	12	S-371-1
	1,175.00	4000	12000	59 1/2	37×71	18.25	491/2	4-4	75	14	S-370-1
5-371-11	1,225.00	4200	12600	591/2	37×75	19.27	491/2	4-4	78	14	S-371-1
	1,275.00	4400	13200	59 1/2	37 x 78	20.04	491/2	4-4	81	14	S-370-1
	1,325.00	4600	13800	59 1/2	37 x 81	20 81	491/2	4-4	84	14	S-371-1
5-370-13		4800	14400	$59\frac{1}{2}$	37×84	21.58	491/2	4-4	87	14	S-370-1
	1,425.00	5000	15000	$59\frac{1}{2}$	37 x 88	22.61	491/2	5-4	91	14	S-371-13
5-370-14	1,475.00	5200	15600	591/2	37 x 91	23.38	491/2	5-4	94	14	S-370-1

See Note on Ratings, Guarantee and Coverings, pages 7 and 8.

Names and list prices of repair parts, see pages 39 to 46.
Flow and return mains to be included in determining capacity of boiler required.
For amount of asbestos cement required to cover each size of boiler, see page 256.

SAFFORD SQUARE-POT HOT WATER BOILER

For Hard or Soft Coal, Wood or Natural Gas LIST PRICES AND DATA

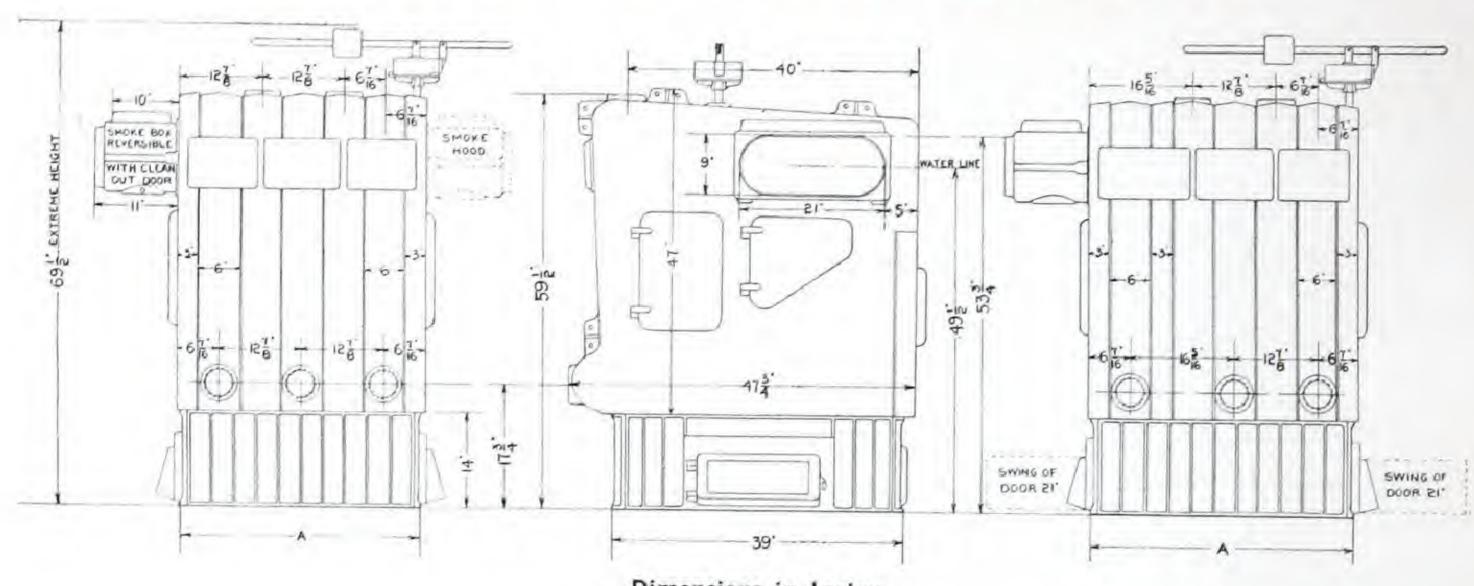
Information required for Ordering Boilers and Boiler Repairs, see page 116

Number	List Price	Capacity Sq. Feet DirectCast Radiation	Capacity Lineal Feet 1 in. Pipe	Height to top of Outlet	Size of Grate Inches	Area Sq. Ft.	Size of Flows and Returns Inches	Dimension See page 38	Size of Smoke Pipe Required	Number
370- 3	\$ 350.00	1300	3900	5916	37 x 20	5.14	1-4	22	9 -	370= 3.
371- 3	400.00	1650	4950	591/2	37 x 23	5.91	1-4	26	9	371- 3
370- 4	450.00	2000	6000	5934	37 x 26	6.68	2-1	29)	10	370- 4
371- 4	500.00	2325	6975	591/2	37×30	7.70	2-4	33	10	371- 4
370- 5	550.00	2650	7950	5912	37×33	8.48	2-4	36	10	370 - 5
371-5	600.00	2975	8925	59 1/2	37 x 36	9.25	2-4	.39	10	371- 5
370- 6	650.00	3300	9900	591/2	37 x 39	10:00	2-4	-12	12	370- 6
371- 6	700.00	3625	10875	5932	37 x 43	11.04	2-4	46	12	371- 6
370-7	750.00	3950	11850	593/2	37 x 46	11 82	2-4	40	12	370- 7
371-7	787.50	4300	12900	591/2	37 x 49	12.59	2-4	52	12	371 7
370-8	837.50	4625	13875	59 1/2	37 x 52	13 36	2-4	-55	12	370-8
371-8	887.50	4950	14850	591/2	37 x 55	14.13	2-4	58	12	371- 8
370-9	937.50	5275	15825	591/2	37 x 59	15 16	2-4	62	12	370 - 9
371-9	987.50	5600	16800	59 1/2	37 x 62	15:93	2-4	65	12	371 - 9
370-10	1,037.50	5950	17850	591/2	37 x 65	16.70	3-1	68	12	370-10
371-10	1,087.50	6275	18825	591/2	37 x 69	17.73	3-4	72	12	371-10
370-11	1,137.50	6600	19800	5932	37×71	18.25	3-4	75	14	370-11
371-11	1,187.50	6925	20775	591/2	37 x 75	19.27	3-4	78	14	371-11
370-12	1,212.50	7250	21750	591/2	37 x 78	20.04	3-4	81	14	370-12
371-12	1,262,50	7600	22800	591/2	37 x 81	20.81	3-4	84	14	371-12
370-13	1,312,50	7925	23775	591/2	37×84	21.58	3-4	87	14	370-13
371-13	1,362.50	8250	24750	591/2	37 x 88	22.61	3-4	91	14	371-13
370-14	1,412.50	8575	25725	591/2	37×91	23 38	3-4	94	14	370-14

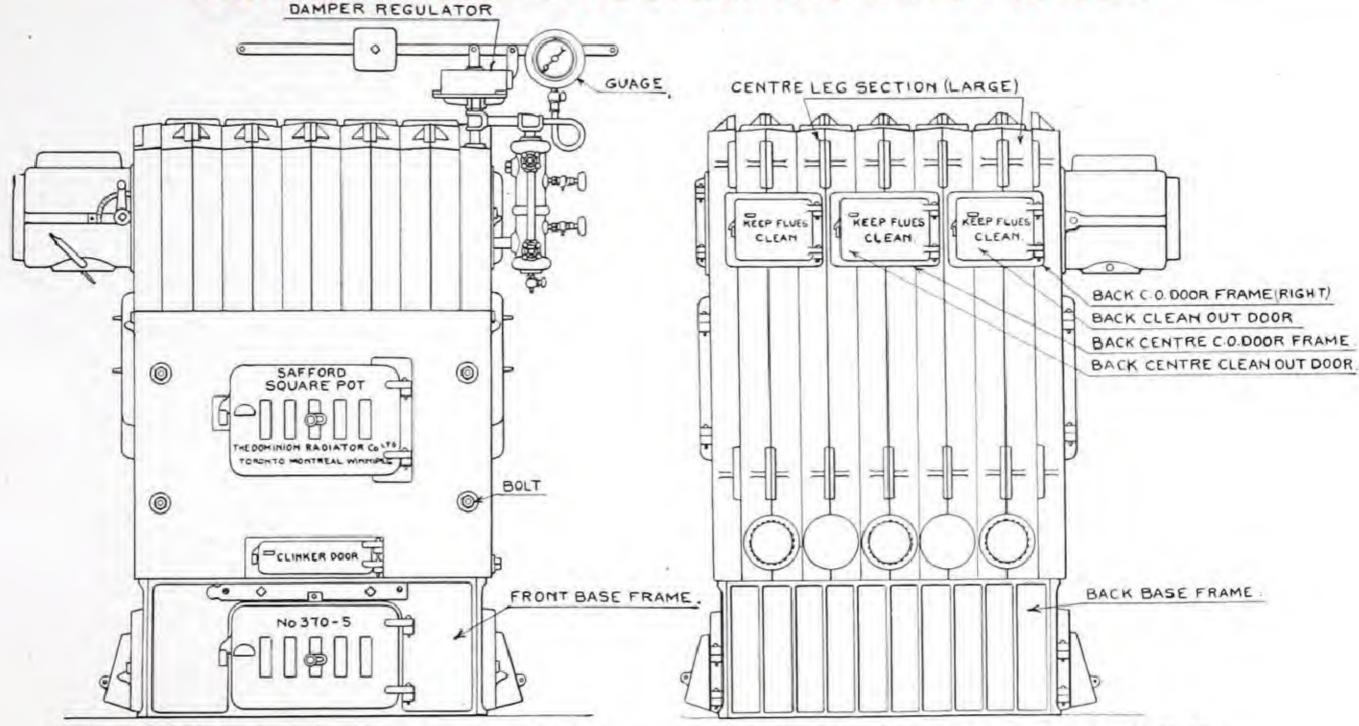
See Note on Ratings, Guarantee and Coverings, pages 7 and 8.

Names and list prices of repair parts, see pages 39 to 46.

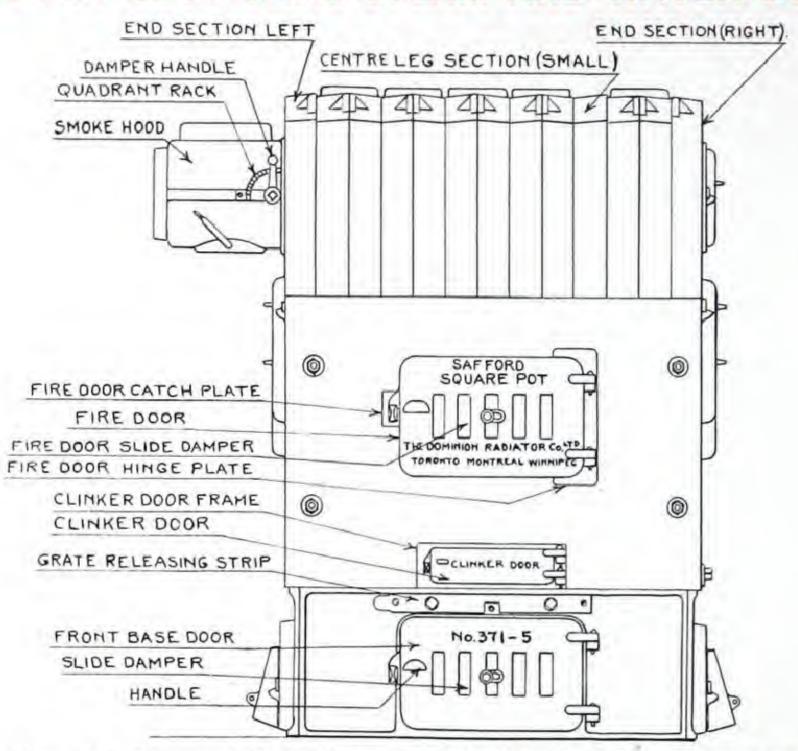
Flow and return mains to be included in determining capacity of boiler required. For amount of asbestos cement required to cover each size of boiler, see page 256.



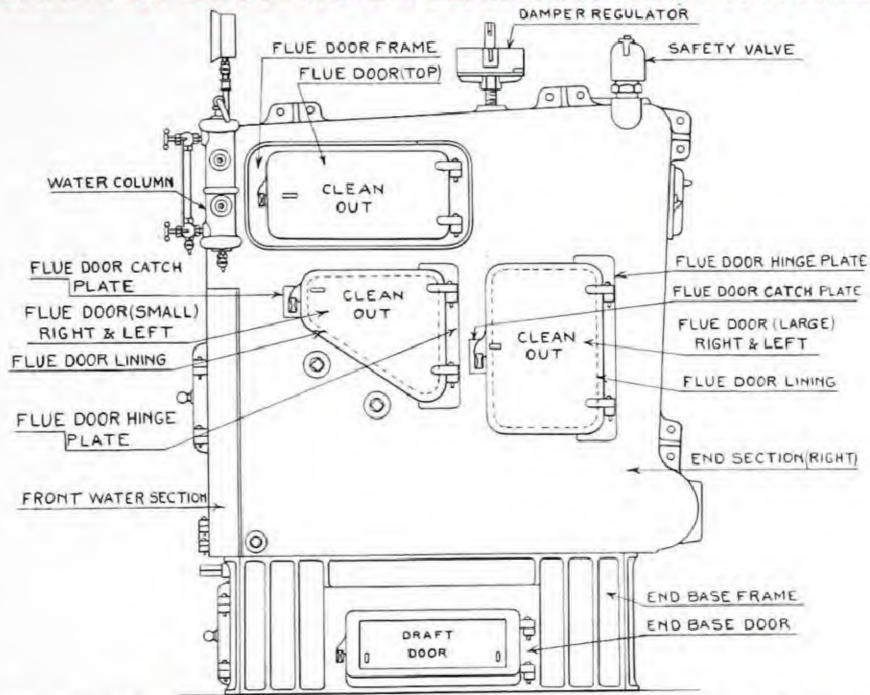
Dimensions in Inches



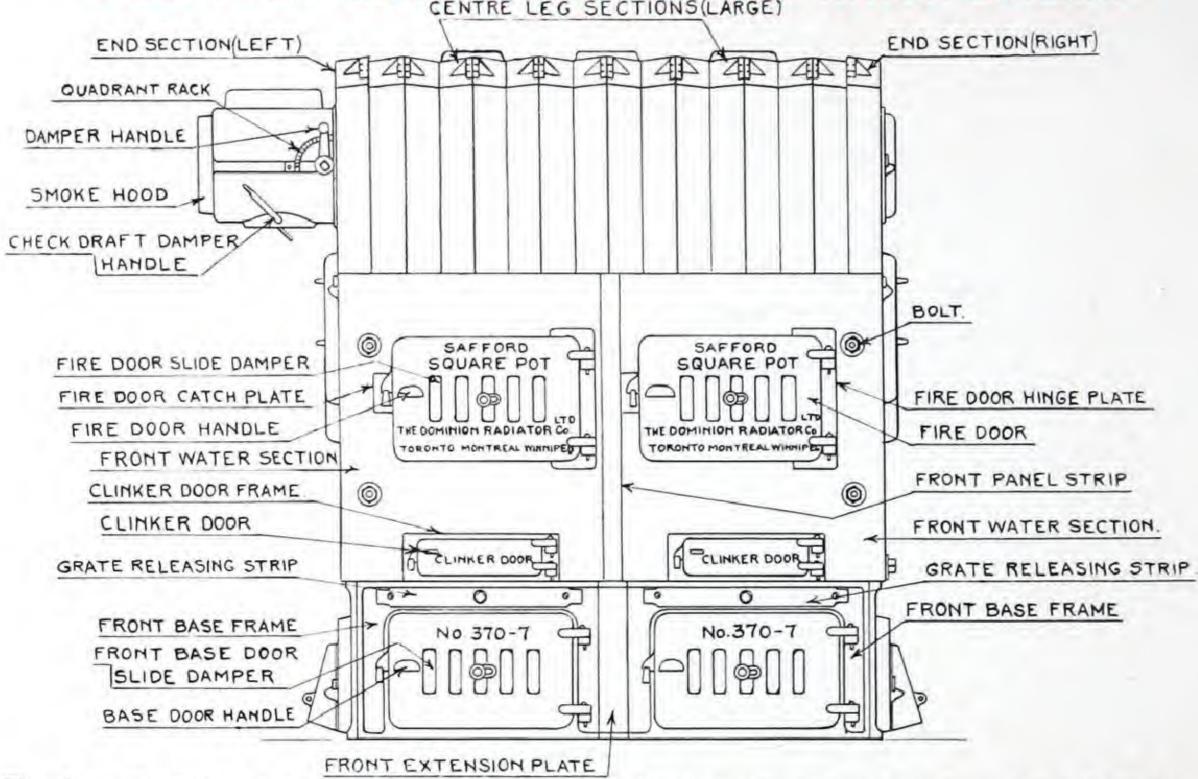
The above illustrations give the names of repair parts.



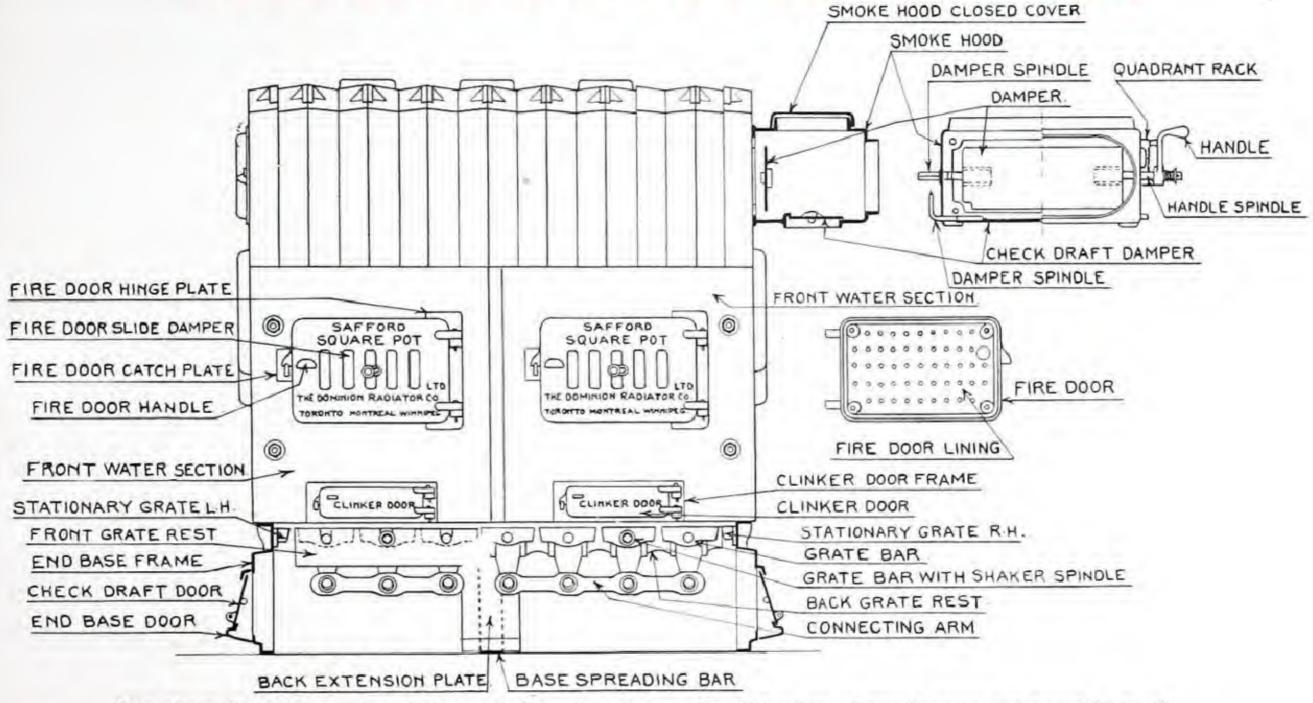
The above illustrations give the names of repair parts.



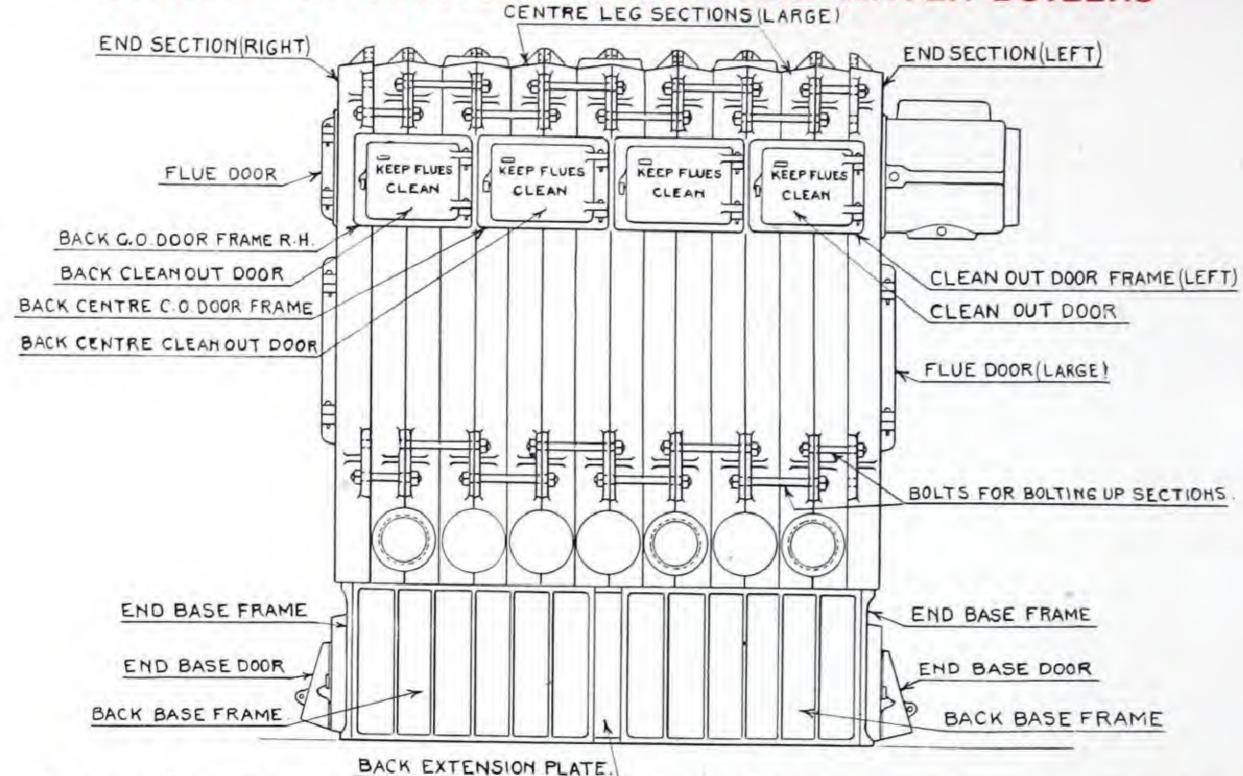
The above illustrations give the names of repair parts.



The above illustrations give the names of repair parts.



The above illustrations give the names of repair parts.



The above illustrations give the names of repair parts.

SQUARE-POT SECTIONAL STEAM BOILERS

NAMES AND LIST PRICE OF REPAIR PARTS FOR SQUARE-POT BOILERS

Pattern No.	Name of Part	Price	Pattern No.	Name of Part	Price
B-1-37-15	Back Base Frame, No. 7		B-29-37-15	2 Sect. Right Hand Clean-Out Door Frame,	
B-2-37-15	Front Base Frame, No. 7	7.80		No. 1½	\$ 1.10
B-3-37-15	End Base Frame	10.00	B-30-37-15	2 Sect. Right Hand Clean-Out Door, No. 11/2.	80
B-4-37-15	End Base Door	1.60	B-31-37-15	2 Sect. Left Hand Clean-out Door, No. 11/2	.80
B-5-37-15	Check Draft Door	1.10	B-32-37-15	Large Flue Door Hinge Plate	1.00
B-6-37-15	Front Base Door	1.80	B-33-37-15	Small Flue Door Hinge Plate	1.00
B-7-37-15	Catch Plate for Flue Door, R. & L		B-34-37-15	Fire Door Hinge Plate	.90
B-8-37-15	Back Grate Rest, No. 4	4.60	B-35-37-15	Catch Plates for Fire Door, R. & L	.25
B-9-37-15	Front Grate Rest, No. 4		B-36-37-15	Top Flue Door Frame	1.50
B-10-37-15	Grate Releasing Strip, No. 6.	1.50	B-37-37-15	Top Flue Door	2.00
B-11-37-15	Grate Bar	8.65	B-38-37-15	Smoke Hood	9.00
B-111/2-37-15	Grate Connecting Lug	.50	B-39-37-15	Smoke Hood, Closed Cover	2.40
B-12-37-15	Grate Bar, with Shaker Spindle	9.00	B-40-37-15	Smoke Hood, Damper	2.60
B-13-37-15	Shaker Handle	2.30	B-41-37-15	Check Draft Damper Spindle	. 20
B-14-37-15	Clinker Door Frame	1.10	B-42-37-15	Check Draft Damper	2.40
B-15-37-15	Clinker Door	.60	B-43-37-15	Check Draft R. H. Damper Spindle	.20
B-16-37-15	Large Fire Door, 20 inch	3 20	B-44-37-15	Check Draft L. H. Damper Spindle	.20
B-16½-37-15	Small Fire Door, 16 inch	2.20	B-45-37-15	Door Handles	.25
B-17-37-15	Large Fire Door Lining	2.30	E-B-46	Smoke-Hood Damper Quadrant, Ratchet Rack	.20
B-18-37-15	Fire Door and Ash Door Slide Damper		B-47-37-15	Smoke-Hood Damper Quadrant Ratchet	
B-19-37-15	Large Right End Flue Door	2.50		Handle	40
B-20-37-15	Large Left End Flue Door		B-48-37-15	Back Base Frame No. 1	6.10
B-21-37-15	Large Flue Door Lining	1.60	B-49-37-15	Front Base Extension Plate	1.40
B-22-37-15	Small Right End Flue Door.	2.00	B-50-37-15	Back Base Extension Plate	1.40
B-23-37-15	Small Left End Flue Door		B-51-37-15	Boiler Section Right End	
B-24-37-15	Small Right End Flue Door Lining		B-52-37-15	Boiler Section, Left End	80.00
B-25-37-15	Small Left End Flue Door Lining		B-53-37-15	Boiler Section, large Centre Leg	75.00
B-26-37-15	3 Sect. Large Centre Clean-out Door Frame		B-54-37-15	Front Water Section	
B-27-37-15	3 Sect. Large Centre Clean-out Door		B-55-37-15	Front Section, Small Centre Leg	58.00
B-28-37-15	2 Sect. Right Hand Clean-out Door Frame,		B-56-37-15	Base Spreading Bar	4.30
	No. 1½	1.10	B-57-37-15	Front Base, Frame No. 5	6.20

SQUARE-POT SECTIONAL STEAM BOILERS

NAMES AND LIST PRICE OF REPAIR PARTS FOR SQUARE-POT BOILERS

Pattern No.	Name of Part	Price	Pattern No.	Name of Part	Price
B-58-37-15	Back Base Frame, No. 5	\$10.00	B-88-37-15	No. 6 Front Grate Rest	\$5.00
B-59-37-15	Front Grate Rest, No. 3		B-89-37-15	No. 7 Front Grate Rest	
B-60-37-15	Back Grate Rest. No. 3		B-90-37-15	No. 8 Front Grate Rest	7.60
B-61-37-15	Grate Releasing Strip No. 7.	1.60	B-91-37-15	No. 1 Back Grate Rest	
B-62-37-15	Fire Door Lining (small)		B-92-37-15	No. 2 Back Grate Rest	3.60
B-63-37-15	3 Sec. (small) Back Clean-out Door-Frame		B-93-37-15	No. 5 Back Grate Rest	5.20
B-64-37-15	3 Sec. Back Clean-out Door.		B-94-37-15	No. 6 Back Grate Rest.	6.20
B-65-37-15	No. 1 Front Base Frame		B-95-37-15	No. 7 Back Grate Rest	
B-66-37-15	No. 2 Front Base Frame	4.10	B-96-37-15	No. 8 Back Grate Rest	
B-67-37-15	No. 2 Back Base	6.80	B-97-37-15	Front Panel Strip	
B-68-37-15	Pivot Bearing for Base Butterfly Door	.10	B-98-37-15	Stationary Grate or Coal Guard	4.00
B-69-37-15	No. 1 Front Water Section	31.00	B-111-37-15	2 Sec. Back Centre Clean-out Door, No. 2	
B-70-37-15	No. 2 Front Water Section		B-112-37-15	2 Sec. Back Centre Clean-out Door Frame	
B-71-37-15	No. 3 Front Water Section		B-113-37-15	Alignment Plate for Double Sec. Front	
B-72-37-15	No. 4 Front Water Section	45.00	B-114-37-15	Back Base Frame, No. 4	
B-73-37-15	No. 5 Front Water Section	47.00	B-115-37-15	Front Base Frame No. 4	6.00
B-74-37-15	No. 6 Front Water Section		B-116-37-15	Back Base Frame, No. 3	8.00
B-75-37-15	No. 7 Front Water Section		B-117-37-15	Front Base Frame, No. 3	5.20
B-76-37-15	Two-Hole Grate Conn. Arm	- 60	B-118-37-15	Back Base Frame, No. 6	11.00
B-77-37-15	Three-Hole Grate Conn. Arm	.80	B-119-37-15	Front Base Frame, No. 6	
B-78-37-15	Four-Hole Grate Conn. Arm.		B-120-37-15	Back Base Frame, No. 8	13.00
B-79-37-15	No. 1 Grate Releasing Strip	1.20	B-121-37-15	Front Base Frame, No. 8	9.00
B-80-37-15	No. 2 Grate Releasing Strip		No number	2½" Nipple	.25
B-81-37-15	No. 3 Grate Releasing Strip		44	4" Nipple	.40
B-82-37-15	No. 4 Grate Releasing Strip.			5" Nipple	50
B-83-37-15	No. 5 Grate Releasing Strip		74 24	Name Plate (Square Pot)	.20
B-84-37-15	No. 8 Grate Releasing Strip		44 44	Name Plate (Steam Boiler)	.20
B-85-37-15	No. 1 Front Grate Rest		4.4 9.1	Name Plate (Boiler No. Plate)	.20
B-86-37-15	No. 2 Front Grate Rest		94 64	Name Plate, Location Name Plate	.25
B-S7-37-15	No. 5 Front Grate Rest	3.90			

THE SAFFORD MAGAZINE SELF-FEED

DOWN DRAFT BOILERS

MADE IN TWENTY-TWO SIZES, BOTH STEAM AND HOT-WATER IN STEAM, VARYING FROM 500 SQUARE FEET TO 8,250 SQUARE FEET IN WATER, FROM 850 SQUARE FEET TO 13,750 SQUARE FEET

Information required for ordering Boilers and Boiler Repairs, see page 116.

MANUFACTURED BY

THE

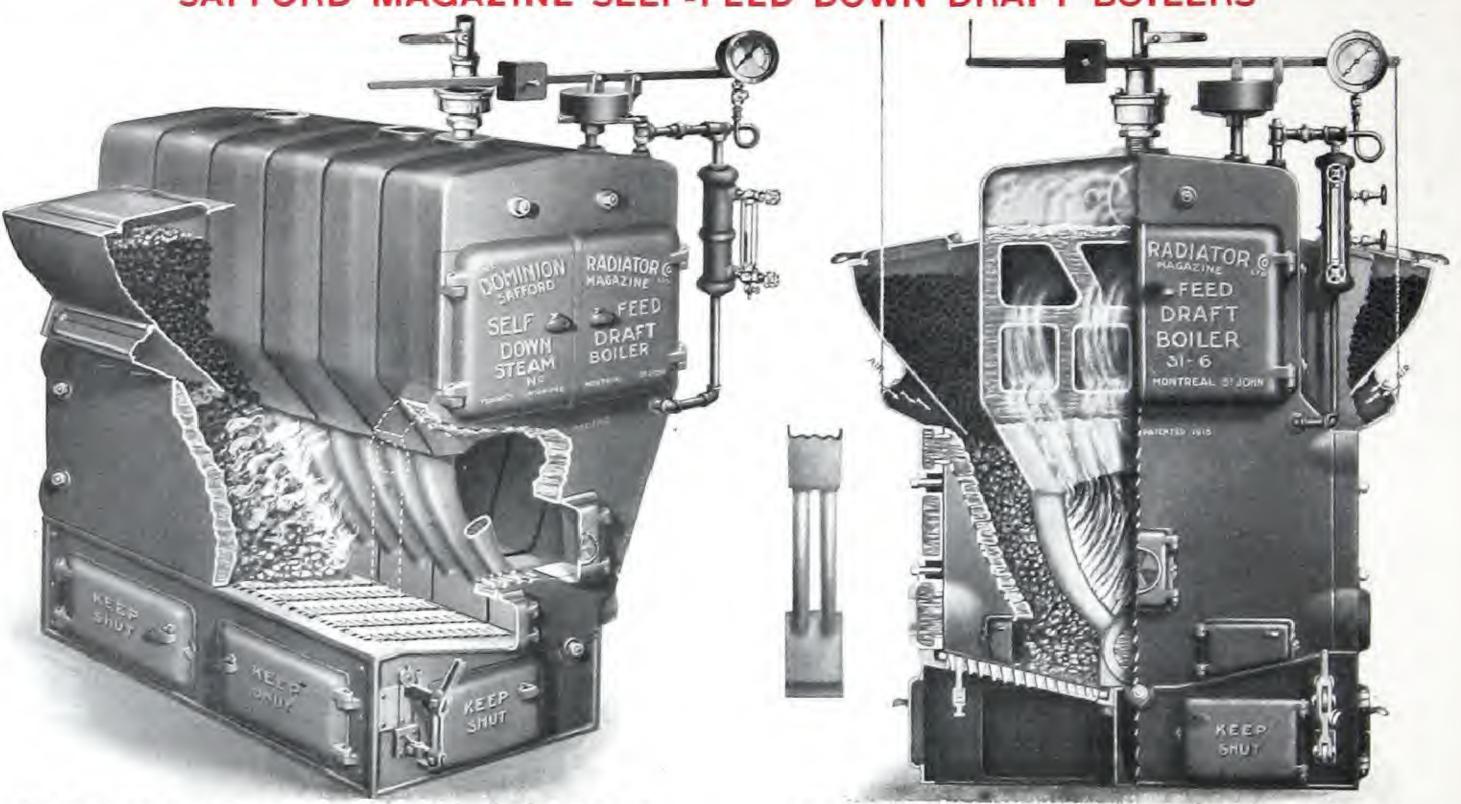
DOMINION RADIATOR COMPANY

St. John Montreal

Hamilton TORONTO

Winnipeg Calgary

Vancouver



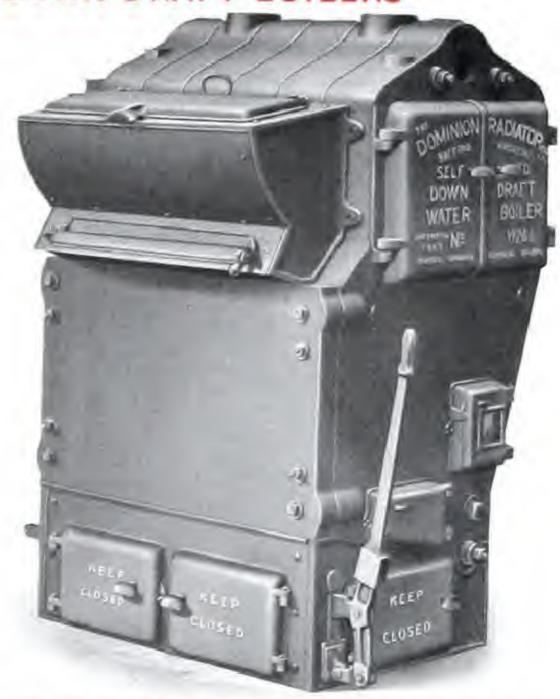
General view of 26 inch Safford Magazine Self-Feed Down Draft Steam Boiler.

Smoke pipe may be taken off either end.

General view of 31 inch and 47 inch Safford Magazine Self-Feed Down Draft Steam Boiler. For list prices, dimensions and capacities, see pages 50 to 53.



General view of 26 inch Safford Magazine Self-Feed Down Draft Water Boiler, showing rear and side. Smoke pipe may be taken off either end.



General view of 26 inch Safford Magazine Self-Feed Down Draft Water Boiler, showing front and side. For list prices, dimensions and capacities see pages 50 to 53.

STEAM-List Prices and Data

26 inch SERIES

				20	men obitibe	,		-		
No.	List Price	Capacity Sq. Ft.	Capacity 1" Pipe Lin. Ft.	Height to Top Outlet	Width	Length	Water Line	Size Chimney	Outlets and Inlets	No.
S-26-3 S-26-4 S-26-5 S-26-6 S-26-7 S-26-8 S-26-9	\$ 275.00 350.00 425.00 487.50 550.00 612.50 675.00	500 750 1000 1250 1500 1750 2000	1500 2250 3000 3750 4500 5250 6000	61 61 61 61 61 61	40 40 40 40 40 40 40	18 24 30 36 42 48 54	53 53 53 53 53 53 53	8 9 9 10 12 12 12	1-3 1-3 2-3 2-3 3-3 3-3 3-3	S-26-3 S-26-4 S-26-5 S-26-6 S-26-7 S-26-8 S-26-9
				31	inch SERIES	3				
S-31-5 S-31-6 S-31-7 S-31-8 S-31-9 S-31-10 S-31-11	625.00 737.50 850.00 962.50 1,075.00 1,187.50 1,300.00	1800 2250 2700 3150 3600 4050 4500	5400 6750 8100 9450 10800 12150 13500	62 62 62 62 62 62 62	58 58 58 58 58 58 58	30 36 42 48 54 60 66	54 54 54 54 54 54 54 54	12 12 14 14 15 15 16	2-4 2-4 3-4 3-4 3-4 4-4 4-4	S-31-5 S-31-6 S-31-7 S-31-8 S-31-9 S-31-10 S-31-11
				47	inch SERIES	5				
S-47-5 S-47-6 S-47-7 S-47-8 S-47-9 S-47-10 S-47-11 S-47-12	925.00 1,112.50 1,300.00 1,487.50 1,675.00 1,862.50 2,050.00 2,237.50	3000 3750 4500 5250 6000 6750 7500 8250	9000 11250 13500 15750 18000 20250 22500 24750	78 78 78 78 78 78 78 78	75½ 75½ 75½ 75½ 75½ 75½ 75½ 75½	50½ 59 67½ 76 84½ 93 101½ 110	61 61 61 61 61 61 61	14 14 16 18 18 18 20 20	2-5 2-5 2-5 3-5 3-5 3-5 4-5 4-5	S-47-5 S-47-6 S-47-7 S-47-8 S-47-9 S-47-10 S-47-11 S-47-12

See Note on Ratings, Guarantee and Coverings, pages 7 and 8.

Flow and return mains to be included in determining capacity of boiler required. Length includes smoke box. Prices include full set of trimmings and fire tools. Information required for ordering Boilers and Boiler repairs, see page 116

For amount of asbestos cement required to cover each size of boiler, see page 256.

Domestic coil openings furnished when required.

HOT WATER-List Prices and Data

26 inch SERIES

No.	List Price	Capacity Sq. Ft.	Capacity 1" Pipe Lin. Ft.	Height to Top Outlet	Width	Length	Size Chimney	Outlets and Inlets	No.
W-26-3 W-26-4 W-26-5 W-26-6 W-26-7 W-26-8 W-26-9	\$ 300.00 325.00 400.00 462.50 525.00 587.50 650.00	850 1250 1650 2075 2500 2925 3350	2550 3750 4950 6225 7500 8775 10050	61 61 61 61 61 61	40 40 40 40 40 40 40	18 24 30 36 42 48 54	8 9 9 10 12 12 12	1-3 1-3 2-3 2-3 3-3 3-3 3-3	W-26-3 W-26-4 W-26-5 W-26-6 W-26-7 W-26-8 W-26-9
				31 inch	SERIES				
W-31-5 W-31-6 W-31-7 W-31-8 W-31-9 W-31-10 W-31-11	600.00 712.50 812.50 925.00 1,037.50 1,150.00 1,237.50	3000 3750 4500 5250 6000 6750 7500	9000 11250 13500 15750 18000 20250 22500	62 62 62 62 62 62 62 62	58 58 58 58 58 58 58	30 36 42 48 54 60 66	12 12 14 14 14 15 16	2-4 2-4 3-4 3-4 3-4 4-4 4-4	W-31-5 W-31-6 W-31-7 W-31-8 W-31-9 W-31-16 W-31-11
				47 inch	SERIES				
W-47-5 W-47-6 W-47-7 W-47-8 W-47-9 W-47-10 W-47-11 W-47-12	887.50 1,075.00 1,237.50 1,425.00 1,612.50 1,800.00 1,987.50 2,175.00	5000 6250 7500 8750 10000 11250 12500 13750	15000 18750 22500 26250 30000 33750 37500 41250	78 78 78 78 78 78 78 78 78	75½ 75½ 75½ 75½ 75½ 75½ 75½ 75½	50½ 59 67½ 76 84½ 93 101½ 110	14 14 16 18 18 18 20 20	2-5 2-5 2-5 3-5 3-5 3-5 4-5 4-5	W-47-5 W-47-6 W-47-7 W-47-8 W-47-9 W-47-10 W-47-11 W-47-12

See Note on Ratings, Guarantee and Coverings, pages 7 and 8.

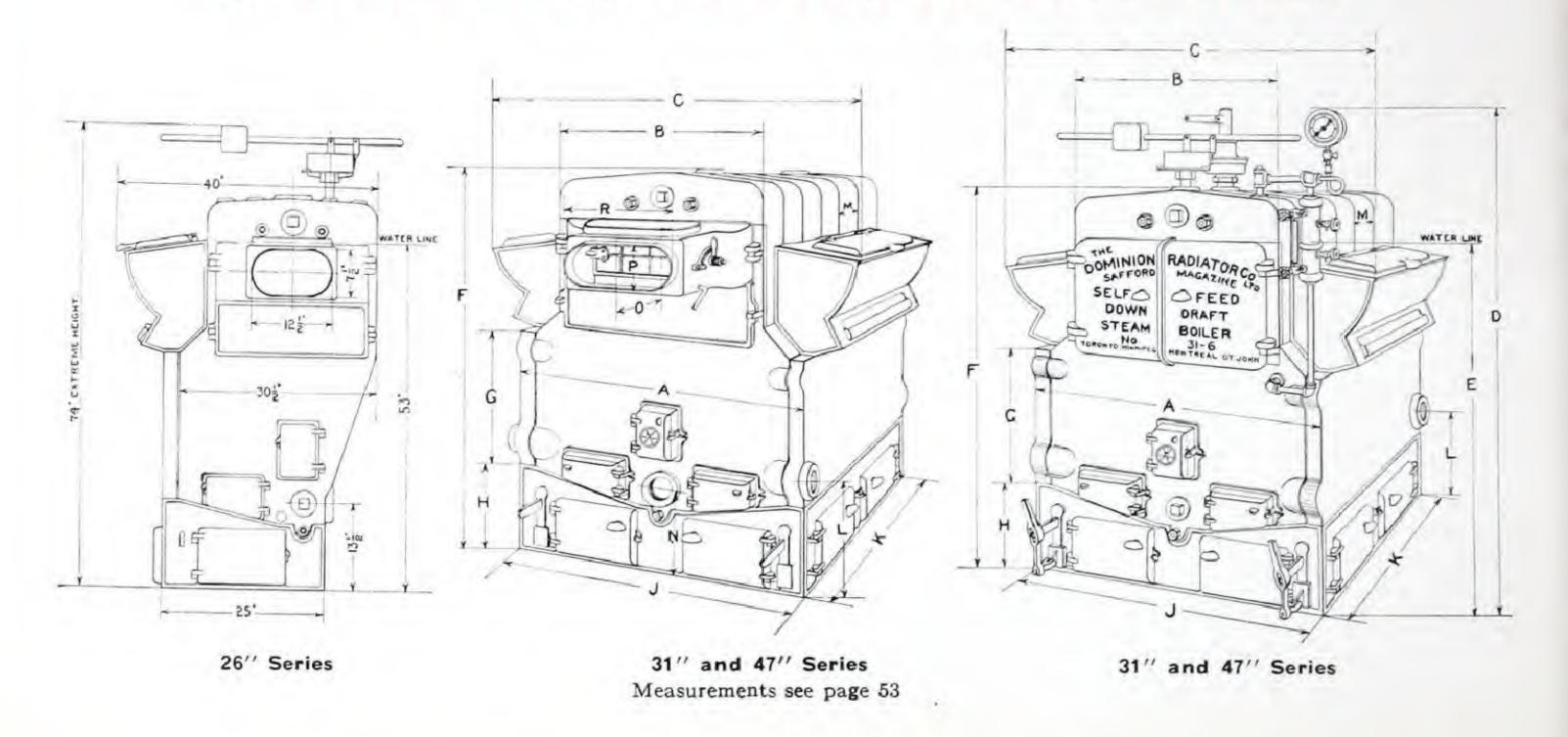
Flow and return mains to be included in determining capacity of boiler required.

Length includes smoke box. Prices include full set of trimmings and fire tools.

Information required for ordering Boilers and Boiler repairs, see page 116.

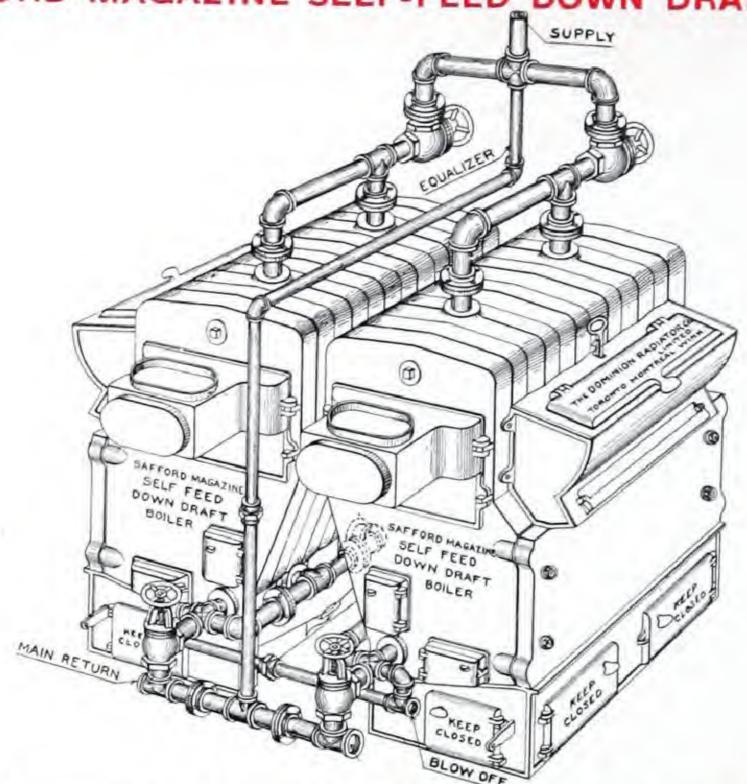
For amount of asbestos cement required to cover each size of boiler, see page 256.

Domestic coil openings furnished when required,



Measurements

	Dir	mensions				Dimensi	on K.		
Name	26"	31"	47′′	26''	K	31	K	47	K
A B C D E F G H J L M N O P R	33" 26½" 40" 74" 53 " 61" 22¼" 13½" 25" 13½" 6"-Sec. 13½" 7½" (10")-12½	45" 32" 58" 76" 55" 63" 22 ¼" 13 ½" 45" 17" 6"-Sec. 13 ½" 14 ½" 8 ½" (12")-15 ½ (14")-8 ½x 20"		144.01.44.0					1 (= 17 0) 1000 - 100 17



The above cut illustrates two twin connected SELF-FEED steam boilers less trimmings.

THE

SAFFORD SECTIONAL

STEAM AND HOT-WATER BOILERS

MADE IN TWENTY-SEVEN SIZES, EITHER STEAM OR WATER 300 TO 9,375 SQUARE FEET STEAM RADIATION 900 TO 15,400 SQUARE FEET WATER RADIATION

Information required for ordering Boilers and Boiler repairs, see page 116

THE



St. John

Montreal

Hamilton

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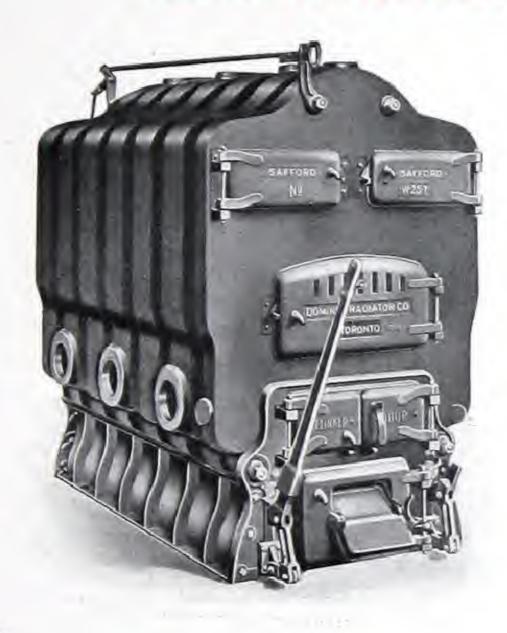
Vancouver



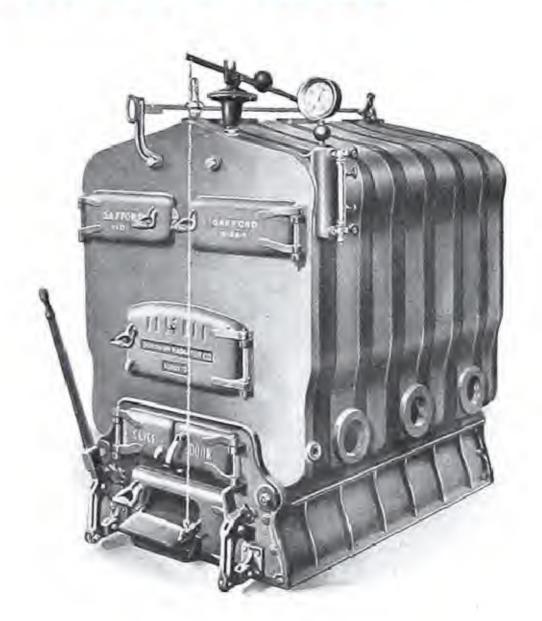
STEAM
No. S-48-8 BOILER (Patented)



No. S-36-7 BOILER



WATER No. W-25-7 BOILER



STEAM No. S-25-7 BOILER

SAFFORD SECTIONAL STEAM BOILERS

List Prices and Data

	LIST Prices and Data													
No.	List	The second secon		Length	Height	Width	Water	Grate	Average	Amount Service	Smoke	Ash Pit	No.	
Includ'g	Price	Sq. Feet	Feet	Total	Total	Total	Line	Area	Fire Pot		Pipe	(Inside)	Including	
Sections	Complete	Radiation	1" Pipe	Inches	Inches	Inches	Inches	Sq. Ft.	Sq. Ft.	Inches	Inches	Inches	Sections	
S-15-4	\$215.00	300	900	407/8	531/2	341/2	40 1/8	1.95	2.47	2-3	8	20 18 x 21 5/8	S-15-4	
S-15-5	255.00	425	1,275	471/8	531/2	341/2	407/8	2.60	3.30	2-3	8	20 H x 27 H	S-15-5	
S-15-6	295.00	550	1,650	533/8	531/2	341/2	40%	3.25	4.13	2-3	8	20 16 x34	S-15-6	
S-19-5	312.50	600	1,800	513/4	553/4	38	433/8	3.32	4.00	2-3	9	20 x29 15	S-19-5	
S-19-6	350.00	750	2,250	583/8	553/4	38	433/8	4.15	5.00	2-3	9	20 x365%	S-19-6	
S-19-7	400.00	900	2,700	65	553/4	38	433/8	4.98	6.00	3-3	9	20 x43 5	S-19-7	
S-22-5	375.00	800	2,400	531/4	591/2	42	461/4	4.08	4.84	2-4	10	231/8×31 13	S-22-5	
S-22-6	425.00	1,000	3,000	6014	591/2	42	461/4	5.10	6.05	2-4	10	231/8x387/8	S-22-6	
S-22-7	475.00	1,200	3,600	6714	591/2	42	461/4	6.12	7.26	3-4	10	231/8x45 18	S-22-7	
S-25-5	450.00	1.100	3,300	591/4	641/8	471/4	51	5.44	6.48	2-4	11	$28 \times 35\frac{3}{16}$	S-25-5	
S-25-6	512.50	1.350	4,050	667/8	641/8	471/4	51	6.80	8.10	2-4	îî	28 x42 1/8	S-25-6	
S-25-7	575.00	1,600	4,800	741/2	641/8	4714	51	8.16	9.72	3-4	îî	28 x50 %	S-25-7	
S-25-8	637.50	1,850	5,550	8214	641/8	4714	51	9.52	11.34	3-4	îî	28 x581/4	S-25-8	
S-28-5	500.00	1,300	3,900	60	67 16	501/2	533/8	6.24	7.33	2-4	12	305/8x351/2	S-28-5	
S-28-6	587.50	1,625	4,875	68	67 16	5012	533/8	7.80	9.16	2-4	12	305/8×431/2	S-28-6	
S-28-7	662.50	1,950	5,850	76	67 16	501/2	533/8	9.36	10.99	3-4	12	305/8×511/2	S-28-7	
S-28-8	750.00	2,275	6,825	84	67 16	501/2	533/8	10.92	12.83	3-4	12	305/8x591/2	S-28-8	
S-36-5	700.00	2,100	6,300	6934	761/4	60	6034	9.12	10.40	2-5	15	3813 x4034	S-36-5	
S-36-6	837.50	2,625	7,875	787/8	7614	60	6034	11.40	13.00	2-5	15	3816 x49 7/8	S-36-6	
S-36-7	962.50	3,150	9,450	88	7614	60	6034	13.68	15.60	3-5	15	3816x59	S-36-7	
S-36-8	1;100.00	3,675	11,025	971/8	7614	60	6034	15.96	18.20	3-5	15	3816x681/8	S-36-8	
S-36-9	1,225.00	4,200	12,600	10614	7614	60 .	6034	18.24	20.80	4-5	15	38 15 x77 14	S-36-9	
S-48-6	1,500.00	5,275	15,825	92	97	80	72	18.00	18.75	2-6	21	52 x54 1/2	S-48-6	
S-48-7	1,750.00	6,300	18,900	1023/4	97	80	72	21.60	22.50	2-6	21	52 x6514	S-48-7	
S-48-8	2,012.50	7,325	21,975	1131/2	97	80	72	25.20	26,25	3-6	21	52 x76	S-48-8	
S-48-9	2,262.50	8,350	24,950	12414	97	80	72	28.80	30.00	3-6	21	52 x863/4	S-48-9	
S-48-10	2,525.00	9,375	28,125	135	97	80	72	32.40	33.75	3-6	21	52 x97½	S-48-10	

Additional measurements on pages 60 and 61. For each supply outlet on top of Boiler there are corresponding return inlets on both sides. Return tappings on 48-inch Steam Boilers are 4-inches, and the two on the face of back section should be yoked together and used in preference to the other inlets. Do not bush flow-pipe outlets—connect all of them full size to the main. Above are hard-coal ratings—soft coal requires one size larger in each case. See Note on Ratings, page 7. For Wood Burning—On special order the 19-inch Boilers are fitted with special grates and 10¼ x 18-inch fire-door; 22-inch and 25-inch, with 11½ x 18-inch fire door; 28-inch with 12½ x 19½-inch fire door; 36-inch, with 13½ x 24-inch fire door. All Boilers can be furnished with pea coal grates if required. Include mains and returns in determining capacity required.

All above boilers shipped from Winnipeg Branch for west of Winnipeg are furnished with pea coal grates unless otherwise ordered. For amount of asbestos cement required to cover each size of boiler, see page 256.

SAFFORD SECTIONAL WATER BOILERS

List Prices and Data

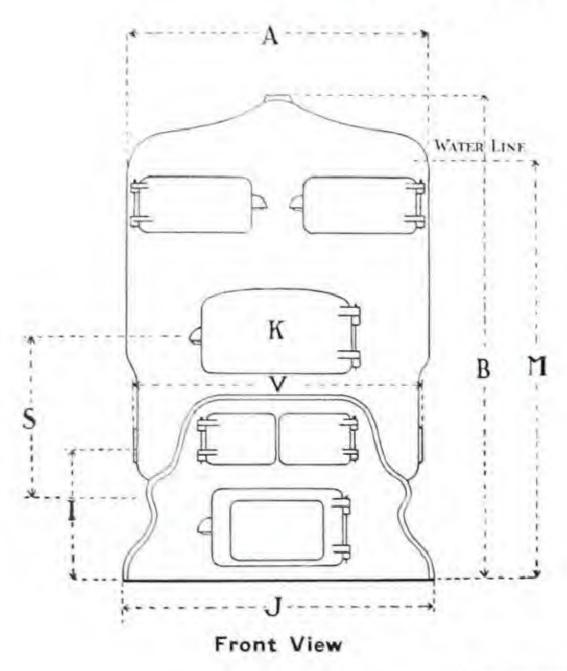
	List Frices and Data												
Number	List	Ratings	(Note)	Length	Height	Width	Grate	Average		Smoke	Ash Pit	No.	
Including	Price	Sq. Feet	Feet	Total	Total	Total	Area	Fire Pot	Outlets	Pipe	(Inside)	Including	
Sections	Complete	Radiation	1" Pipe	Inches	Inches	Inches	Sq. Feet	Sq. Feet	Inches	Inches	Pipe	Sections	
W-15-4	\$ 190.00	500	1,500	407/8	421/2	271/2	1.95	2.47	2-3	8	2014x215/8	W-15-4	
W-15-5	230,00	700	2,100	471/8	421/2	271/2	2.60	3.30	2-3	8	20 18 x27 18	W-15-5	
W-15-6	270.00	900	2,700	533/8	421/2	2712	3.25	4.13	2-3	8	20 16 x34	W-15-6	
W-19-5	287.50	1,000	3,000	5134	50	311/4	3.32	4.00	2-3	9	20 ×29 14	W-19-5	
W-19-6	325.00	1,250	3,750	583/8	50	311/4	4.15	5.00	2-3	9	20 x365/8	W-19-6	
W-19-7	375.00	1,500	4,500	65	50	311/4	4.98	6:00	3-3	9	20 x43 %	W-19-7	
W-22-5	350.00	1,300	3,900	531/4	53	351/4	4.08	4.84	2-4	10	23 1/8×31 1	W-22-5	
W-22-6	400.00	1,650	4,950	601/4	53	3514	5.10	6.05	2-4	10	231/8×387/8	W-22-6	
W-22-7	450.00	2,000	6,000	6714	53	3514	6.12	7.26	3-4	10	2318x451	W-22-7	
W-25-5	425.00	1,825	5,475	5914	57 1/8	403/8	5.44	6.48	2-4	11	28 x35 %	W-25-5	
W-25-6	487.50	2,225	6,675	6678	57 1/8	403/8	6.80	8.10	2-4	11	28 x42 1/8	W-25-6	
W-25-7	550.00	2,650	7,950	741/2	573/8	403/8	8.16	9.72	3-4	11	28 x50 %	W-25-7	
W-25-8	612.50	3,050	9,150	8214	57 1/8	403%	9.52	11.34	3-4	11	28 x581/4	W-25-8	
W-28-5	475.00	2,150	6,450	60	60%	431/2	6.24	7.33	2-4	12	30%x351/2	W-28-5	
W-28-6	562,50	2,675	8,025	68	60%	431/2	7.80	9.16	2-4	12	30%x43½	W-28-6	
W-28-7	637.50	3,200	9,600	76	60%	431/2	9.36	10 99	3-4	12	30%x511/2	W-28-7	
W-28-8	725.00	3,725	11,175	84	60%	431/2	10.92	12.83	3-4	12	30%x591/2	W-28-8	
W-36-5	675.00	3,450	10,350	6934	691/8	531/4	9.12	10.40	2-5	15	38 14 x40 34	W-36-5	
W-36-6	800.00	4,325	12,975	78%	691/8	5314	11,40	13 00	2-5	1.5	38 16 x 49 78	W-36-6	
W-36-7	925.00	5,200	15,600	88	6938	5314	13.68	15_60	3-5	15	38 14 x 59	W-36-7	
W-36-8	1,062.50	6,050	18,150	971/8	6918	531/4	15,96	18.20	3-5	15	38 13 x 68 1/8	W-36-8	
W-36-9	1,187.50	6,925	20,775	1061/4	691/8	5314	18.24	20.80	4-5	15	38 18 x77 1/4	W-36-9	
W-48-6	1,437.50	8,700	26,100	92	8134	68	18.00	18 75	2-6	21	52 x54 1/2	W-48-6	
W-48-7	1,687.50	10,375	31,125	10234	8134	68	21.60	22.50	2-6	21	52 x651/4	W-48-7	
W-48-8	1,950.00	12,050	36,150	11312	8134	68	25.20	26.25	3-6	21	52 x76	W-48-8	
W-48-9	2,200.00	13,725	41,175	12414	8134	68	28.80	30.00	3-6	21	52 x8634	W-48-9	
W-48-10	2,462.50	15,400	46,200	135	8134	68	32.40	33.75	3-6	21	52 x971/2	W-48-10	

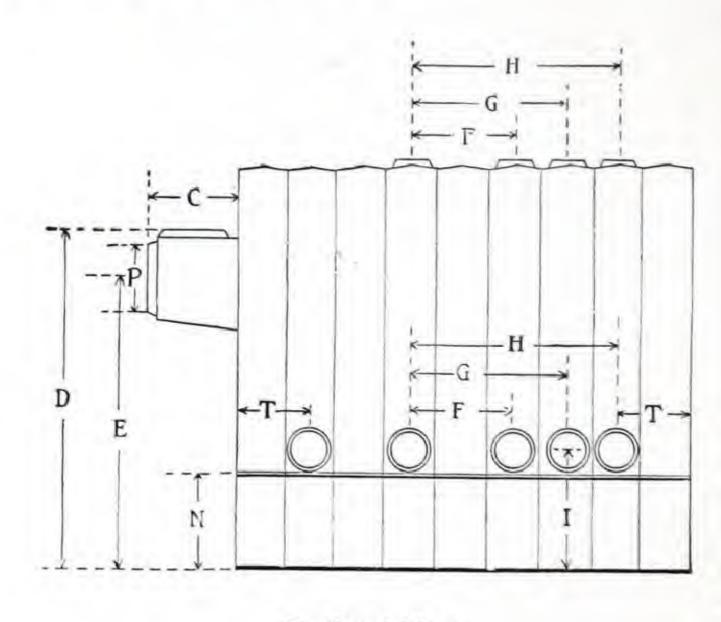
Additional measurements on pages 60 and 61. For each supply outlet on top of Boiler there are corresponding return inlets on both sides. The return tappings on the back section of the 48-inch Boilers should be yoked together and used in preference to the additional return tappings on either side of the Boiler. Above are hard-coal ratings—soft coal requires one size larger. See Note on ratings, page 7. For Wood Burning—On special order the 19-inch Boilers are fitted with special grates and 10% x 18-inch fire-door; 22-inch and 25-inch, with 11% x 18-inch fire-door; 28-inch, with 12% x 19%-inch fire door; 36-inch, with 13% x 24-inch fire door. All Boilers can be furnished with pea coal grates, if required.

Include mains and returns in determining capacity required.

All above boilers shipped from Winnipeg Branch for west of Winnipeg are furnished with pea coal grates unless otherwise ordered. For amount of asbestos cement required to cover each size of boiler, see page 256.

SAFFORD SECTIONAL BOILER MEASUREMENTS





Sectional View

For measurements, see page 61.

SAFFORD SECTIONAL BOILER MEASUREMENTS

Tables of distances between points as noted upon the outline drawings of Safford Sectional Boilers as shown on opposite page. These measurements are all given in inches.

	15-inch	Boilers	19-inch	Boilers	22-inch	Boilers	25-inch	Boilers	28-inch	Boilers	36-inch	Boilers	48-inch	Boilers
	Water	Steam	Water	Steam	Water	Steam	Water	Steam	Water	Steam	Water	Steam	Water	Steam
ABCDEFGHIJKMNPST	27½ 42¼ 13⅓ 41⅓ 34¾ 12⅓ 18¾ 25 16⅓ 23¾ 8x14 11¾ 8 13¼ 7⅓	28½ 46% 13% 41¼ 34¾ 12½ 18¾ 25 16% 23¾ 8x14 40⅓ 11¾ 8 13¼ 7½	31 1/4 50 15 5/8 45 1/8 37 3/4 13 1/4 19 7/8 26 1/2 16 26 *8 x 14 9 3/8 9 13 1/4 8	3214 50 15% 4518 3734 1314 1978 2612 16 26 *8x14 4338 938 9	3614 5214 1514 4734 4012 1418 2114 2814 1634 2918 *8x14	36 14 52 14 15 14 47 14 40 1/2 14 1/8 21 14 28 14 16 14 29 1/8 *8 x 14 46 14 9 1/2 10 14 1/2 8 1/2	40% 57% 17½ 53 44% 15% 23% 30% 17% 30% *9x18	4134 5778 1732 53 4434 1534 2376 3034 *9x18 51 978 11	44 % 60% 18 % 553% 46 % 16 24 32 17 % 37 % *9 x 18	44 ¹ / ₂ 60 ³ / ₃ 18 ³ / ₈ 55 ³ / ₈ 46 ³ / ₄ 16 24 32 17 ³ / ₈ 37 ³ / ₈ *9x18 53 ³ / ₈ 10 12 16 9 ³ / ₂	5314 6918 2114 6338 5276 1814 2738 3619 18 6 10x20	5414 6019 2118 6338 5278 1814 2734 3612 1854 10x20 6034 10th 15 1858	68 81% 27% 73% 50% 21% 32% 43 22% 58% 11x19	69 8134 2734 7338 5935 2135 3234 43 2238 5838 11x11 72 1444 21

† Measured without Smoke Hood Cover. ‡Measured with Smoke Hood Cover on. * For Wood, Feed Door K in 19-inch Boilers is 10½ x 18 inches; in 22-inch Boilers, 11½ x 18 inches; in 25-inch Boilers, 11½ x 18 inches; in 28-inch Boilers, 12½ x 20 inches. Do not bush the flow-pipe outlets of Steam Boilers; connect all of them full size to the main.

The distance between the faces of the bosses in which return inlets are tapped on each side of the boiler in both Steam and Water Boilers is as follows:—15-inch grate, 25 inches; 22-inch grate, 33 inches; 28-inch grate, 41 inches; 36-inch grate, 523, inches; 48-inch grate, 64 inches.

SECTIONAL BOILER PARTS

List Price of Parts to Increase Boiler One Size

	STE	AM	WATER						
No. 15-inch	Price \$40.00 50.00 50.00 62.50	No. 28-inch 36-inch 48-inch	No. 15-inch	Price 40.00 50.00 50.00 62.50	No. 28-inch 36-inch 48-inch				

ARRANGEMENT OF GRATE BARS AND CONNECTING ARMS

Boiler No.	Lett- Hand Grate Bars	Right- Hand Grate Bars	Size Right-Hand Connecting Arm	Boiler No.	Left- Hand Grate Bars	Right Hand Grate Bars	Size Right-Hand Connecting Arm
S- or W-15-4 S- or W-15-5 S- or W-15-6 S- or W-19-5	3 4 5 4			S- or W-28-6 S- or W-28-7 S- or W-28-8 S- or W-36-5	3 3 4 2	2 3 3 2	Medium Long Short
S- or W-19-6 S- or W-19-7 S- or W-22-5 S- or W-22-6	6 2 3	Manager and the second		S- or W-36-6	3 4 4	2 3 3 4	Long
S- or W-22-7 S- or W-25-5 S- or W-25-6 S- or W-25-7	3 3 3	2 2 3	Medium	S- or W-48-6 S- or W-48-7 S- or W-48-8 S- or W-48-9	3 4 4	2 3 3 4	Short
S- or W-25-8 S- or W-28-5	$\frac{4}{2}$	3 2	Long	S- or W-48-10	5	4	Long

SAFFORD TRIUMPH MOGUL WATER HEATERS

MADE IN TEN SIZES WITH CAPACITIES RANGING FROM 55 GALLONS TO 660 GALLONS PER HOUR

Information required for ordering Boilers and Boiler Repairs, see page 116

MANUFACTURED BY

THE



St. John

Montreal

Hamilton

TORONTO

Winnipeg

Calgary

Vancouver



BRONCO



TORO



No. T-101

For data and list prices, see pages 66 and 71



No. T-00



No. T-0



Nos. T-10, T-20, T-30



Nos. T-12, T-22, T-32

For data and list prices, see pages 66 and 71.

LIST PRICES AND DATA

Pattern Name	No.	Nom. Diam. Grate	Grate	Height Floor to Centre of Flow Inches	Height Floor to Centre of Return Inches	Height to Top of Outlet Inches	Height to Top of Heater Inches	Size of Top Inches	Size Outlets Inches	Capa- city in Gallons	List Price	No.
Bronco Laundry	No8 No9	8 8	Slide-centre	$15\frac{1}{2}$ $15\frac{1}{2}$	$12\frac{3}{4}$ $12\frac{3}{4}$	******	$21\frac{1}{2}$ $21\frac{1}{2}$	14x20 15x21½	1-1 1-1	55 55	\$13.25 14.25	No8 No9
Toro Laundry	8-D 9-D	10 10	Slide-centre	$\frac{22\frac{3}{4}}{22\frac{3}{4}}$	$\frac{12\frac{1}{2}}{12\frac{1}{2}}$		30 30	14x20 15x21½	$1-1\frac{1}{2}$ $1-1\frac{1}{2}$	100 100	32.00 33.00	8-D 9-D
Triumph Mogul, with Base Plate and Legs	T-00 T-0 T-101	10 10 10	** ** **		15	$ \begin{array}{c} 24\frac{1}{2} \\ 31\frac{1}{2} \\ 33 \end{array} $			$\begin{array}{c} 1-1\frac{1}{2} \\ 1-1\frac{1}{2} \\ 1-1\frac{1}{2} \\ 1-1\frac{1}{2} \end{array}$	60 90 140	20.00- 30.00 40.00	T-00 T-0 T-101
Triumph Mogul, with Base Plate	T-10 T-12 T-20 T-22 T-30 T-32	12 12 15 15 18 18	Rocking		13½ 13¾ 13¾ 13¾ 13¾	35½ 40½ 41½ 47½ 47½ 41½ 48			3-1½ 3-2 3-2 3-2 3-2	190 210 380 425 600 660	48.00 58.00 68.00 80.00 100.00 120.00	T-10 T-12 T-20 T-22 T-30 T-32

Nos. T-10, T-20, T-30 are without dome sections.

Nos. T-12, T-22, T-32 are equipped with dome sections.

Additional measurements, page 70.

For names and list prices of repair parts, see pages 71 to 78.

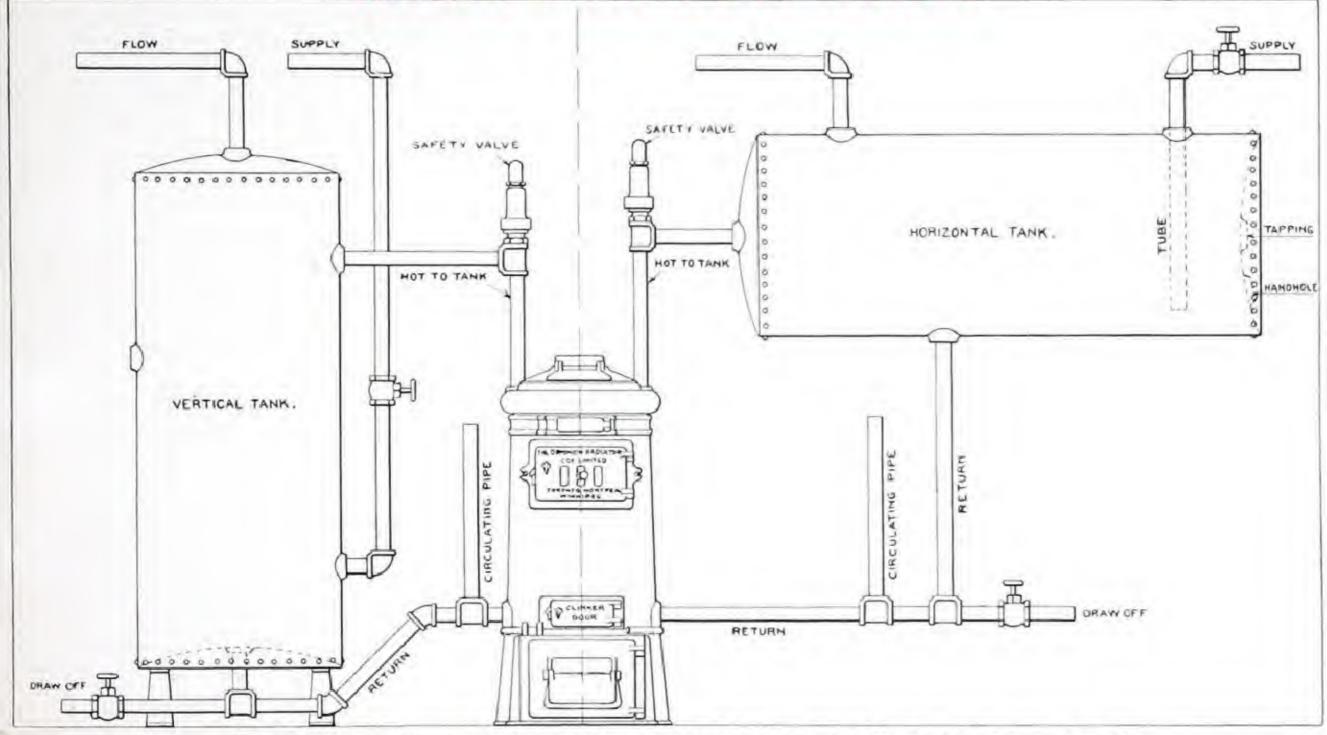
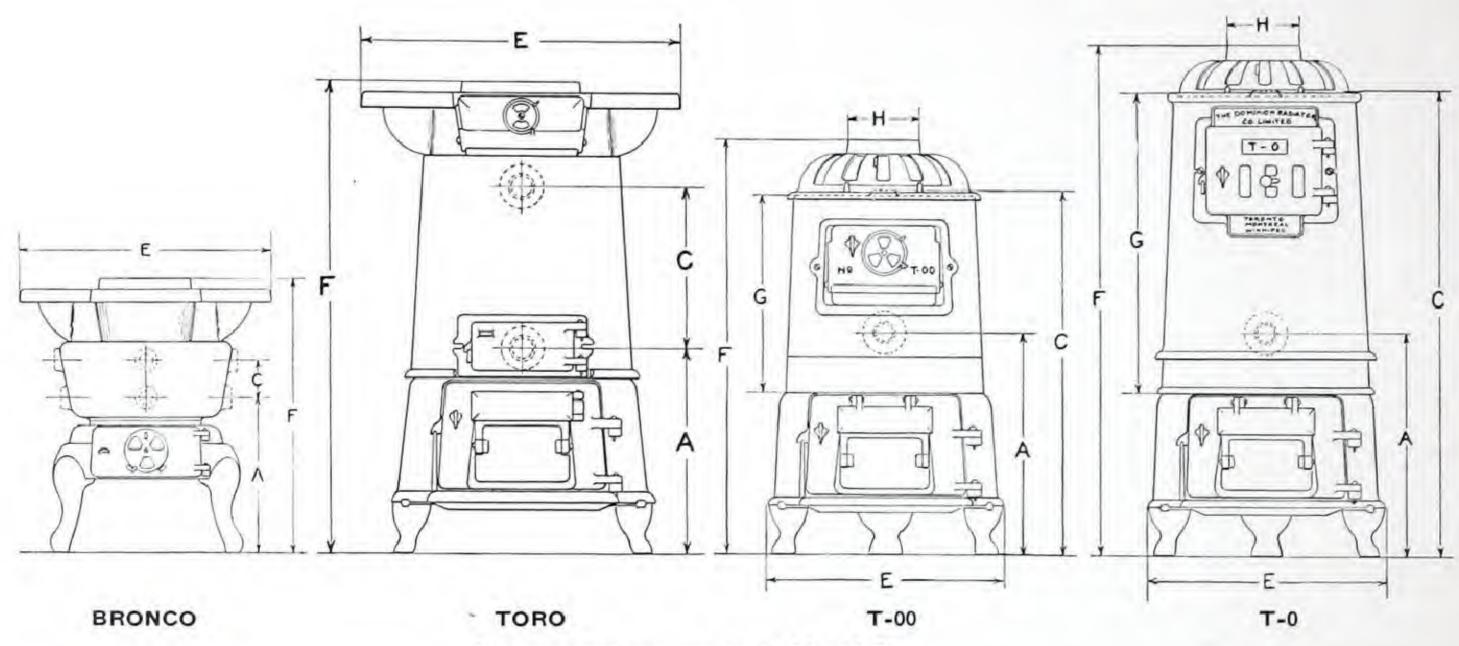
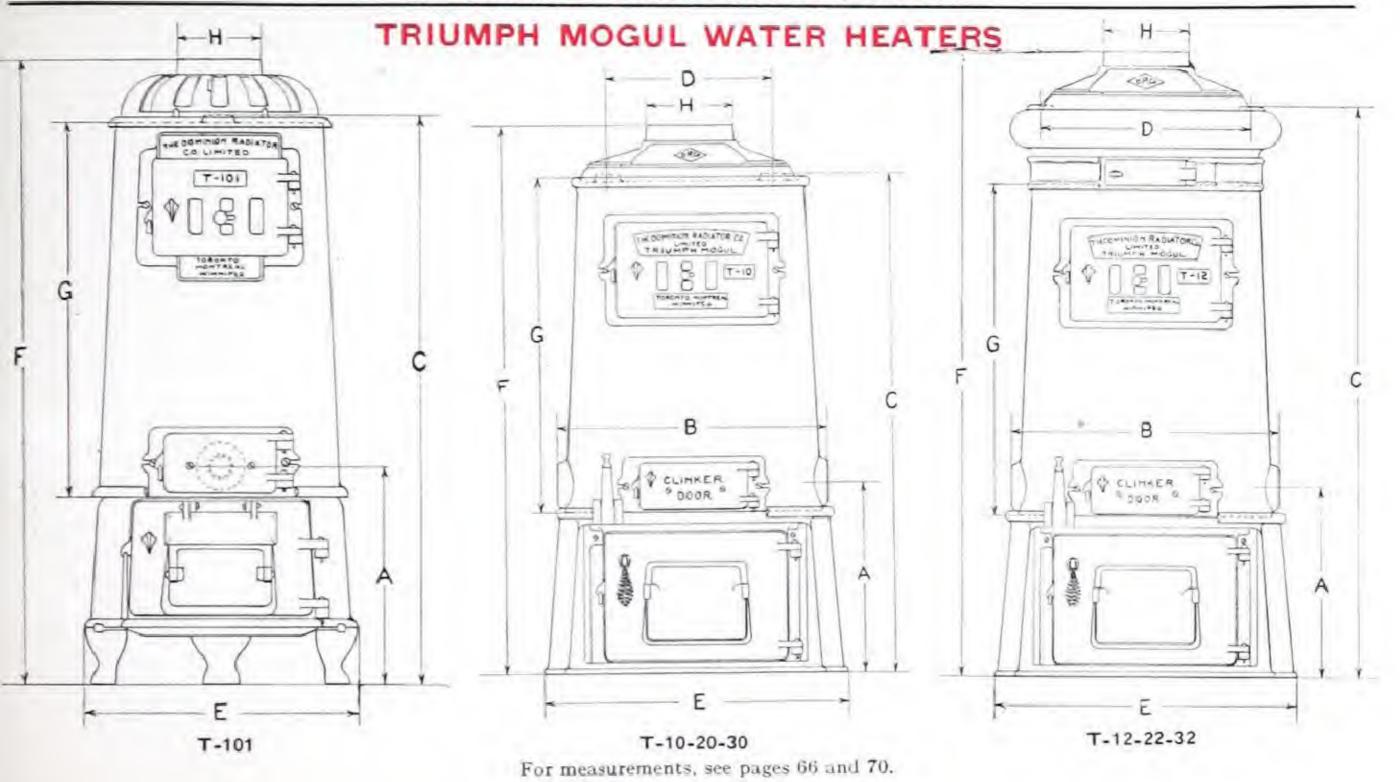


Illustration of proper methods of Connecting Vertical and Horizontal Storage Tanks
For safety, all Heaters should be connected up with Relief Valves, and in high pressure installations Reducing Valves should be used.



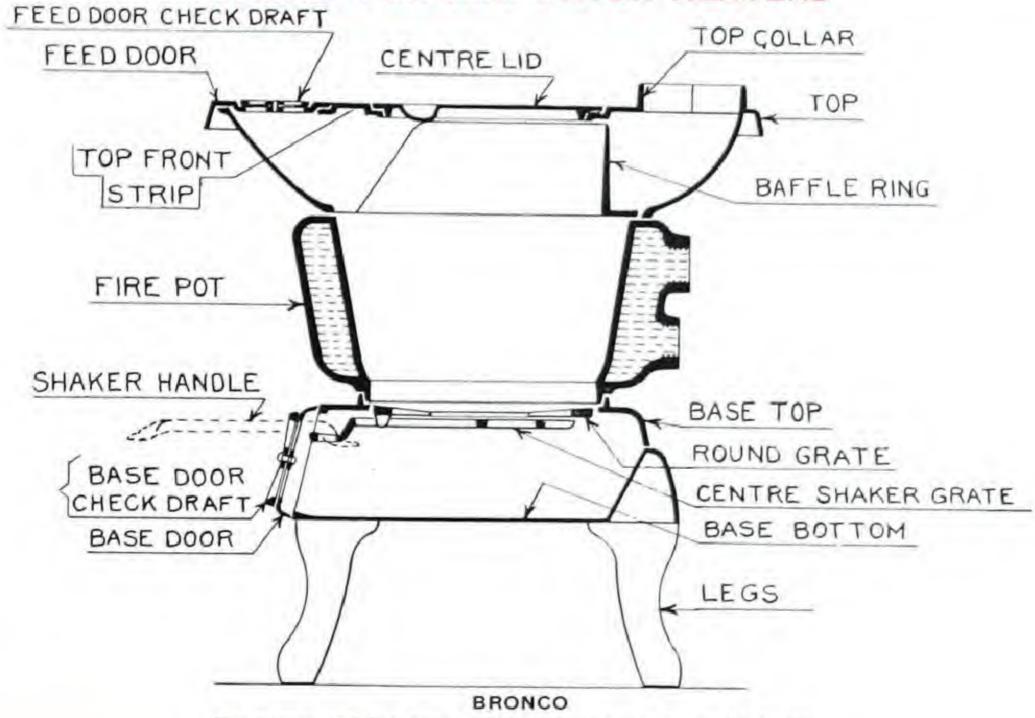
For measurements, see pages 66 and 70.

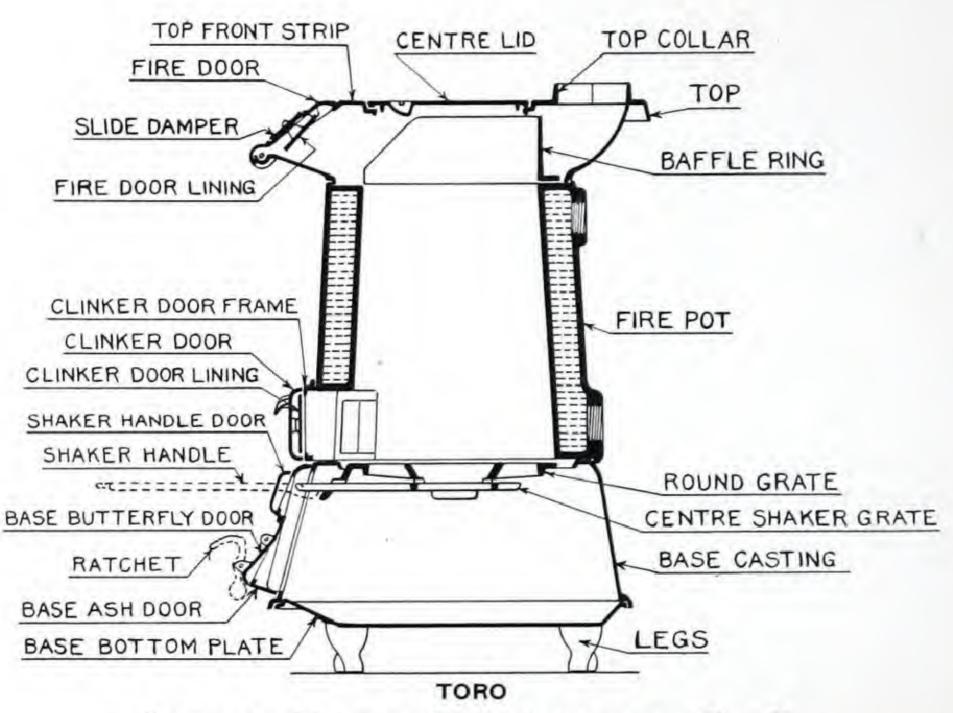
28

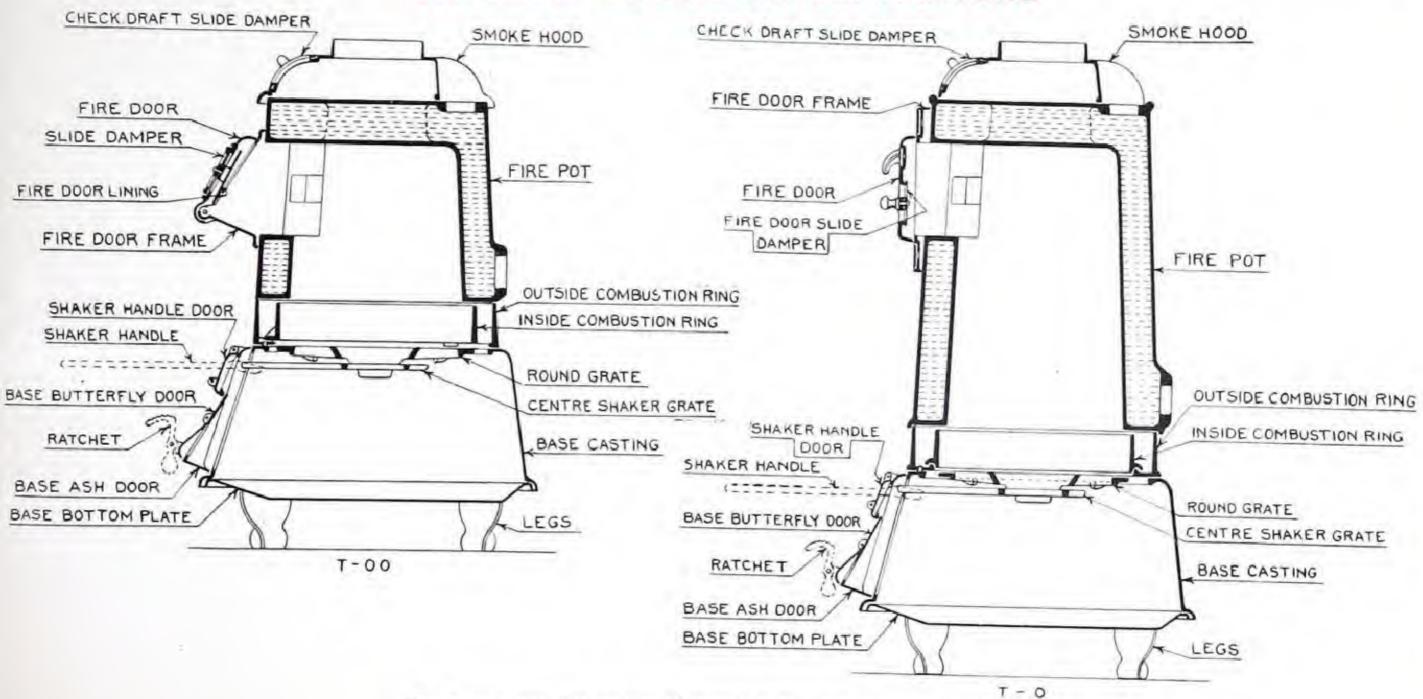


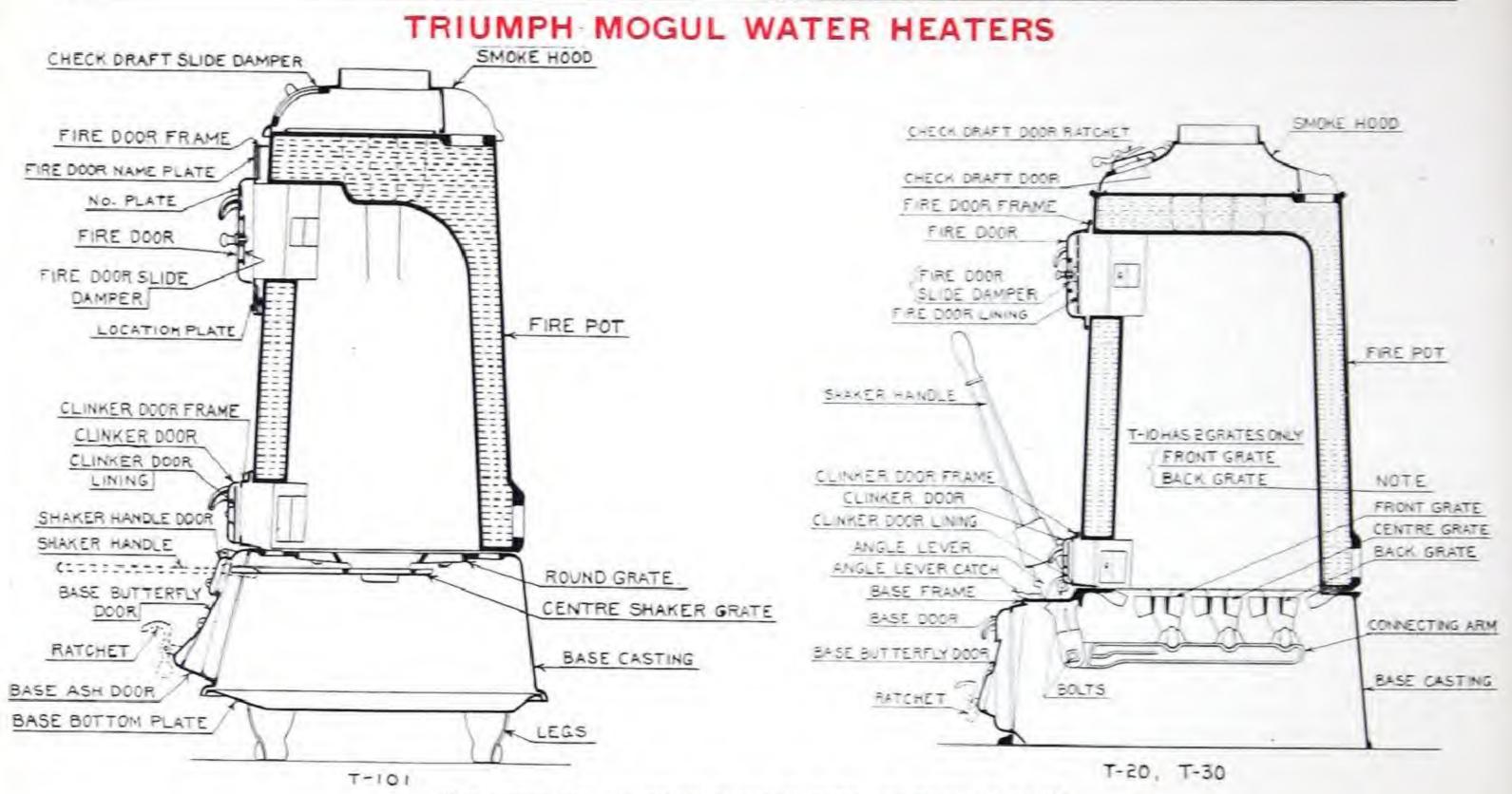
MEASUREMENTS

	Pattern	No.	Α	В	С	D	E	F	G	H
Bronco.		8	1234		234		20	211/2	******	
441		9	123/4		23/4		211/2	211/2		
Toro La	aundry	8-D	$12\frac{1}{2}$	*******	101/4		20	30		
**	111011212121	9-D	$12\frac{1}{2}$	4	101/4	******	$21\frac{1}{2}$	30		
Triumpl	Mogul	00	15		241/2		18	281/2	131/2	5
10		0	15		311/2	*******	18	35	201/2	5
	** *********	101	123/4		33		18	37	22	5
**		10	131/2	181/2	351/2	12	21	391/2	233/4	6
10.		12	131/2	181/2	401/2	141/2	21	443/4	233/4	6
SX.		20	133/4	21	411/2	143/4	23	461/4	291/2	6
		22	1334	21	471/2	1634	23	521/4	291/2	6
41		30	1334	241/2	411/2	17	26	461/2	291/2	7
4.6		32	1334	241/2	48	171/2	26	521/2	291/2	7

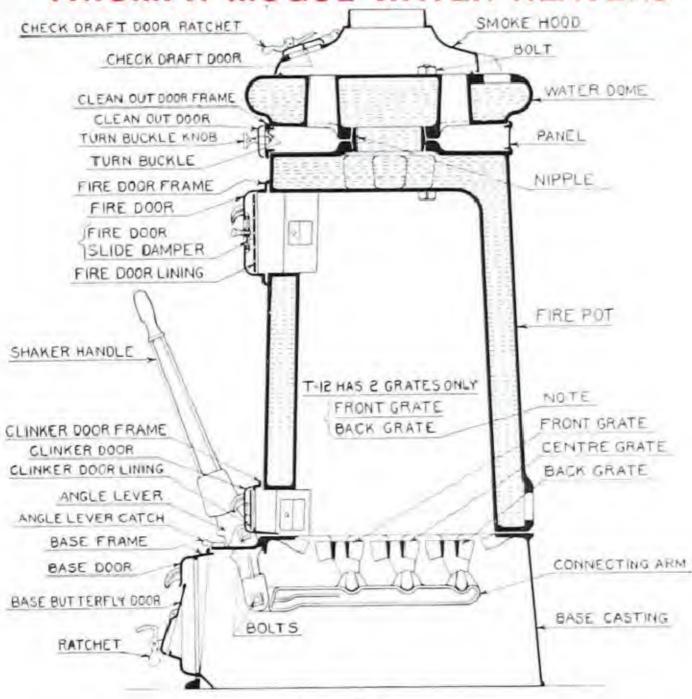








For names and list prices of repair parts, see pages 71 to 78.



T-22, T-32

REPAIR PARTS, TRIUMPH MOGUL WATER HEATERS

Names and List Prices of Repair Parts

210	BRON	CO LAUN	DRY HEATI	ER	TO	RO LAU	NDRY HEATER	
NO.	No	o. 8	No.	. 9	No. 8-	D	No. 9-	-D
Name of Part	No. of Pattern	Price	No. of Pattern	Price	No. of Pattern	Price	No. of Pattern	Price
Fire Pot Top Top Collar Top Front Strip Centre Feed or Fire Door Feed Door Check Draft or Damper Top Lids Baffle Ring Base (Top) Base Bottom Base Door (Ash) Base Door Check Draft Legs (Four) Crate (Round) Centre Slide Grate Grate Shaker Handle Clinker Door	8-14 No number 12 11 8 7 5 10 9	\$9.00 4.00 .40 .40 .40 .20 .60 ea. 1.20 1.20 3.40 .40 .20 .40 ea. .65 .15	13 9-19 9-18 9-17 9-16 15 No number 9-14 No number 12 11 8 7 5 10 9 6	\$9.00 5.00 .40 .40 .60 .20 .60 ea. 1.20 1.20 3.40 .40 .20 .40 ea. .65 .15 .20	1-L & T D8-2-L&T 8-18 9-L & T 8-16 8-L & T 8-14 D8-1½-15 D-9-1-15 T-101-2-15 9-12-3-15 10-36-10 10-37-01	\$14.00 4.00 .40 .40 .50 .20 .60 1.20 5.00 2.60 1.00 .20 .20 .20 .20 .20 .20 .20	1-L & T D9-2-L & T 9-18 9-L & T 9-16 8-L & T 9-14 D-9-1½-15 D-9-1-15 T-101-2-15 9-12-3-15 10-36-10 10-37-01	\$14.00 5.00 .40 .40 .40 .50 .20 .60 1.20 5.00 2.60 1.00 .20 .20 .20 .20 .20 .20

NAMES, PATTERN NUMBERS AND LIST PRICES OF REPAIR PARTS

and the state of t	T-00-10" (Grate	T-0-10"G	rate	T-101-10"	Grate	T-10-12" G	rate	T-12-12"	Grate
Name of Part	No. of Pattern	Price	No. of Pattern	Price	No. of Pattern	Price	No. of Pattern	Price	No. of Pattern	Price
Fire Pot	T-00-30-15	\$16.00	T-0-30-15	\$25.00	T-101-30-15.	\$31.00	Γ-10-30-15	\$48.00 T	-12-30-15	\$48.0
	D-00-11-10.	. 60	D-10-13-15		D-10-13-15		D-12-15-15	80 I	0-12-15-15	5
	D-00-10-10.		D-10-1212-15	1.00	D-10-121/2-15.	1.00	D-12-15	2.20 I	0-12-15	2.5
Fire Door Slide Damper			D-1812-22-15	20	D-181/2-22-15.	.20	D-181/2-22-15		0-1819-22-15	
Fire Door Lining	D-00-12-10.	20	en en en en en	10111						1000
nside Combustion Ring	no number	1.20	no number	2.20						
Outside Combustion Ring	6.9	2.00	- 10		********					IE.
linker Door			8 A L I J + A J = A + A J	30.7%	D-10-12-51-15	.40	D-12-20-15.	40 I	0-12-20-15	1
linker Door Frame				the second second	D-10-52-15		D-12-21-15		0-12-21-15	
linker Door Lining				1 4 4 4 4	D-10-12-53-15		D-15-18-53-15		0-15-18-53-15	100
Base Bottom Plate	D-9-1-15	2.60	D-9-1-15		D-9-1-15		Γ-12-1-15		-12-1-15	
	D-9-11/2-15.		D-9-11/2-15		D-9-132-15		$\Gamma - 12 - 2 - 15$.		-12-2-15	
	No number		No number		No number					1 65
Base Front Frame			. 10	ca. Do	rio number : : :		Γ-12-3-15		-12-3-15	1
Base Door	D-9-2-15	1 00	D-9-2-15	1.00	T-101-2-15		Γ-12-4-15.		-12-4-15	
	9-12-3-15		9-12-3-15		9-12-3-15		I=2M=513		-2-M-513	
	No number		No number		No number		No number		No number	
	D-12-15		D-12-15		T-101-12-15.		Continuer			
Base Shaker Handle	10-42-10	20	10-42-10		10-42-10.	20	1-2-3-4M-7-13	1 001	9.2 13/ 7 13	3 1
Base Angle Lever			10 12 10						-M-6-13	T
Base Angle Lever Catch		44.844	*********	101014	***********		2-95-107			
rate Connecting Arm	**********	44.415		1100.15	TATAL PARTICION	N. S. L. C. A.	F 10 9 15	1 007	-25-107	
Frate Connecting Arm	10 96 10	1 00	10 90 10	4 15/4	10 96 10	1 000	1-12-5-15	1.001	7-12-8-15	
Contro Choles Costs	10-30-10	1.80	10-30-10	1,80	10-30-10	1.80		1111111		1775
Centre Shaker Grate	10-37-01	. 30	10-37-01	. 35	10-37-01	. 35	5 10 6 15	1.3.365	N 10 0 15	1111
ront Grate Bar									0-12-0-15	. 1
Centre Grate Bar	ATTECHNER (ST.)	43.00	*********	****	1817118862388	1 3 8 7 7 3 4	and the same of the same	O PELS	STATE OF THE PARTY.	300
Back Grate Bar	1111111111	4.5.5.5.1				1 - 7 7 - 1	D-12-12-15	1.501	0-12-12-15	
Vater Dome		LAVALT								
Vipple	CATCELLA	494XXX		171177	(3+-11)+1131-		. 411181214741			8
Clean-Out Door		03 H + H (4 - 7 T - 0					0-12-2214-15.	
lean-Out Frame	1189118938193	*****						1	0-12-2234-15.	
lean-Out Panel	ASSESSED FOR COLUMN	201111	141,124211441	111111	11	Made Lake	grainvelgrane.	I area I		
moke-Hood	D-10-1812-15	.80	D-9-1812-15						0-12-181/2-15.	
moke-Hood Check Draft Door					*********	THE THE PARTY	D-12-191/2-15		$0-12-19\frac{1}{2}-15$.	
moke-Hood Slide Damper	D-10-19-15.	.20	D-10-19-15	.20	D-10-19-15	20		Second.	*******	
Location Name Plate					No number	20	No number	. 201	No number	. 1
Company Name Plate			10	.20		(2.0)		00	4.0	1

TRIUMPH MOGUL WATER HEATERS NAMES, PATTERN NUMBERS AND LIST PRICES OF REPAIR PARTS

	T-20-15"	Grate	T-22-15"	Grate	T-30—18" (Grate	T-32-18"	Grate
Name of Part	No. of Pattern	Price	No. of Pattern	Price	No. of Pattern	Price	No. of Pattern	Price
Fire Pot	T-20-30-15	\$70.00	T-22-30-15	\$70.00	T-30-30-15	\$98.00	T-32-30-15	\$98.00
Fire Door	D-12-15-15	.80	D-12-15-15	-80	D-12-15-15	.80	D-12-15-15	.80
Fire Door Frame	T-15-15-15	2.20	T-15-15-15	2.20	T-18-15-16	2.40	T-18-15-16	2.40
Fire Door Slide Damper	D-181/3-22-15	. 20	D-18½-22-15	. 20	D-18½-22-15	.10	D-18½-22-15	.20
Inside Combustion Ring								
Outside Combustion King				******				
Clinker Door	D-12-20-15	.40	D-12-20-15	.40	D-12-20-15	.40	D-12-20-15	.40
Clinker Door Frame	T-15-19-15	.80	T-15-19-15	. 80	Г-18-19-16	1.00	T-18-19-16	1.00
Clinker Door Lining	D-15-18-53-15	-20	D-15-18-53-15	. 20	D-15-18-53-15	.20	D-15-18-53-15	. 20
Base Bottom Plate	1M-1-13	10.40	I-M-1-13	10.40	2M-1-13	12.00	2-M-1-13	12.00
Base Casting	T-15-2-15.	18.00	T-15-2-15		T-18-2-15	22.00	T-18-2-15	22.00
Base Legs								
Base Front Frame	1 & 2M-3-13	1.40	1 & 2M-3-13	1.40	1 & 2M-3-13	1.40	1 & 2M-3-13	1.40
Base Door		1.60	1 & 2M-4-13	1.60	1 & 2M-4-13	1.60	1 & 2M-4-13	1.60
Base Butterfly Door	1 & 2M-5-13	.60	1 & 2M-5-13	. 60	1 & 2M-5-13	.60	1 & 2M-5-13	. 60
Base Butterfly Door Ratchet		.20	No number	. 20	No number	.20	No number	.20
Base Shaker Handle Door								
Base Shaker Handle	1-2-3-4M-7-13	1.00	1-2-3-4-M-7-13	1.00	1-2-3-4M-7-13	1.00	1-2-3-4M-7-13.	1.00
Base Angle Lever	1-M-6-13	80	1-M-6-13	.80	1-M-6-13		1-M-6-13	.80
Base Angle Lever Catch	S-25-107	.20	S-25-107	. 20	S-25-107	.20	S-25-107	.20
Grate Connecting Arm	T-15-8-15.	1.20	T-15-8-15	1.20	2-M-8-13	1.20	2-M-8-13	1.20
Grate (Round)		the same of the sa				12 11 11 11		
Centre Shaker Grate	A-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6	OR 503 504 6 7		500000000000000000000000000000000000000				
Front Grate Bar	T-15- 9-15.	1.75	T-15-9-15.	1.75	S-19-101	2.25	S-19-101	2.25
Centre Grate Bar		2.25			S-19-102	2.75	S-19-102	2.75
Back Grate Bar				1.75	S-19-104		S-19-104	2.25
Water Dome				18.00	***********			25.00
Nipple				. 60			5 inch	.60
Clean-Out Door			T-15-221/-15	. 20			T-18-221/4 -16.	20
Clean-Out Frame	21301333333333		T-15-2234-15	. 60			T-18-2234-16.	.60
Clean-Out Panel			T-15-2216-15	. 60			T-18-2212-16.	.60
Smoke-Hood	T-15-24-15	4 00	T-15-25-15	4.00	T-18-24-16	5 00	T-18-24-16	5.00
Smoke-Hood Check Draft Door	T-15-26-15	80	T-15-26-15	.40	T-15-26-15		T-15-26-15	.40
Smoke-Hood Slide Damper	1 10 20 101	.00	Agent of the last of the second of the secon	1	The second second second second second			.TU
Location Name Plate	No number	.20	No number	. 20	No number		No number	. 20
Company Name Plate			No number		The second of th	44	11	
company reality rate.	****	.20	43.43	, 20		. 20		. 20

SAFFORD-KEWANEE BRICK-SET FIREBOX BOILERS
SAFFORD-KEWANEE PORTABLE FIREBOX BOILERS
SAFFORD-KEWANEE PORTABLE SMOKELESS BOILERS
SAFFORD-KEWANEE PORTABLE SMOKELESS BOILERS
SAFFORD-KEWANEE WATER HEATING GARBAGE BURNERS
SAFFORD-KEWANEE TANKS AND WATER-HEATERS

Information required for ordering Boilers and Boiler Repairs, see page 116

THE



St. John

Montreal

Hamilton

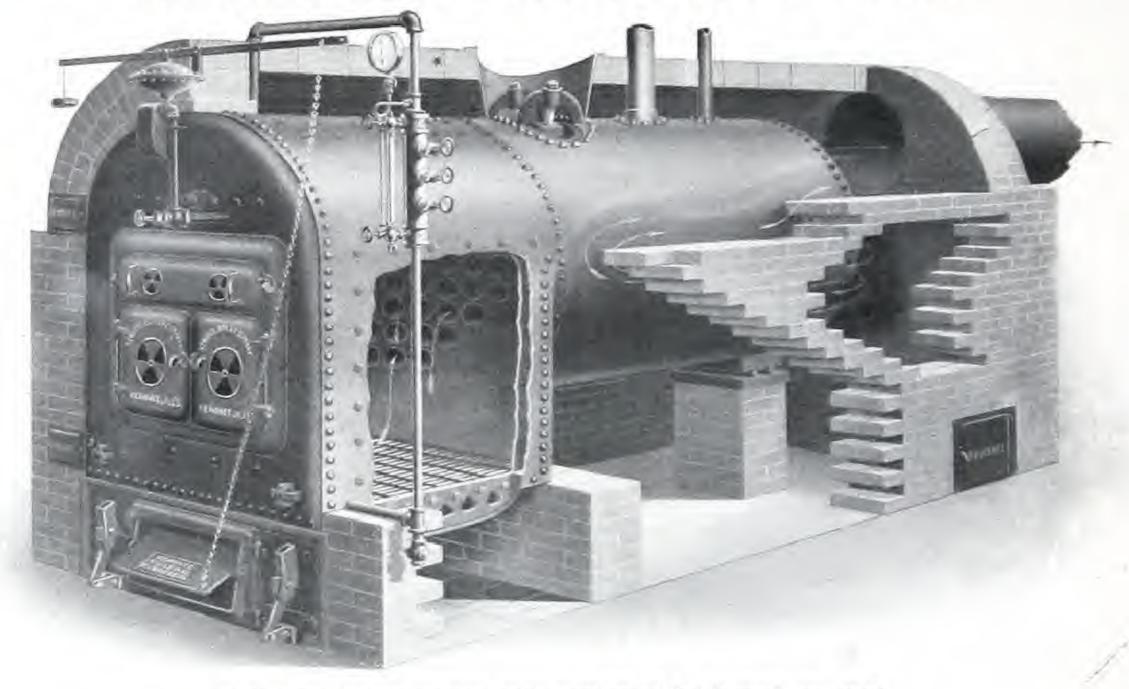
TORONTO

Winnipeg

Calgary

Vancouver

SAFFORD-KEWANEE BRICK-SET FIREBOX BOILERS



Cut shows Boiler erected, with portion of brick work removed.

For specifications, list prices, etc., see following pages.

Ash-Pit 14 inches high on Boilers No. 00 to No. 14 inclusive. 17 inches high on other sizes.

SPECIFICATIONS AND PRICE LIST SAFFORD-KEWANEE BRICK-SET FIREBOX BOILERS

These Boilers will heat all the radiation shown by their rated capacity

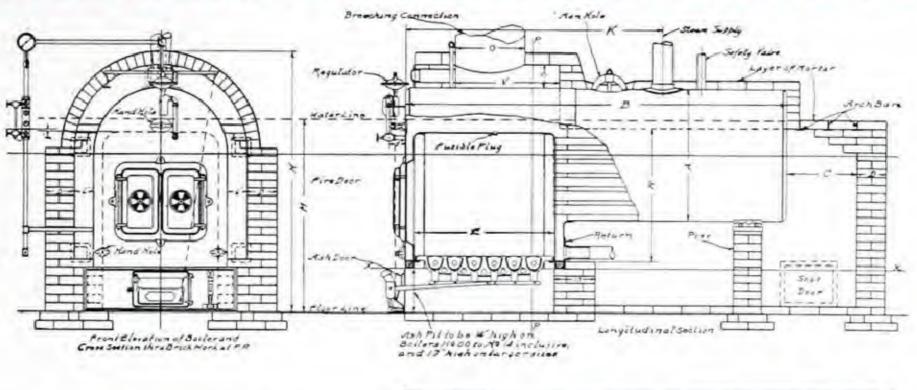
mber	00	0	. 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
oacity, Steam, square feet	500	700	900	1000	1200	1400	1700	2000	2200	2500	3000	3500	4000	4500	5200	6200	7000	8500	9500	1050C	11500	13000
oacity, Water square feet	800	1100	1500	1600	2000	2300	2800	3300	3600	4100	4900	5700	6500	7300	8500	10100	11400	14000	15500	17100	18700	21200
le, Steam Boiler Complete	Dandy	Date	Dagon	Daft	Daub	Dawn	Dairy	Lamp	Dark	Dash	Data	Dated	Dead	Dear	Debut	Defer	Devit	Deist	Delve	Demit	Dense	Dart
le, Water Boiler Complete	Deal	Deny	Dirty	Deter	Dingy	Dirge	Darn	Debar	Dish	Drill	Draft	Dregs	Drink	Debit	Decay	Dusk	Decot	Decry	Definx	Delta	Demon	Dental
e Steam Boiler, Castings		\$270	\$285	\$300	\$320	\$375	\$400	\$435	\$460	\$510	\$560	\$630	\$680	\$735	\$860	\$935	\$1200	\$1310	\$1500	\$1600	\$1800	\$2000
am Trimmings	18	18	18	18	19	19	19	19	23	23	23	23	23	28	28	28	40	40	40	40	44	44
e Water Boiler Castings nd Tools	\$265	\$280	\$295	\$310	\$330	\$390	\$415	\$450	\$475	\$525	\$575	\$645	\$695	8755	\$880	8955	\$1225	\$1335	\$ 1530	\$1630	\$1840	\$2040
proximate Weightpounds	1800	2200	2700	2900	3200	3700	4200	4600	4800	5400	5900	6800	7400	8100	10300	11500	14200	15600	17000	18600	19800	21600
					E	xtra	and	Cha	nges	-add	to a	bove	List									
longer Shell, each foot or action of a foot	\$11	\$11	\$15	\$15	\$15	\$19	\$19	\$19	\$23	\$23	\$23	\$32	\$32	\$32	\$40	\$40	\$50	\$50	\$60	\$60	\$70	870
longer Firebox, including rate, each six inches	\$15	\$15	\$20	\$20	\$20	\$25	\$25	\$25	\$30	\$30	\$30	\$40	\$40	\$40	\$45	845	\$55	\$55	865	\$65	\$80	\$80
ought iron space rings and stra stays and braces for 00 lbs. working pressure	\$30	\$30	\$33	\$33	\$34	\$36	\$37	\$38	\$42	\$45	\$47	\$50	\$52	\$53	\$66	871	\$80	\$85	\$90	\$95	\$105	\$110
r flue Clean-out Doors	\$12	\$12	\$12	\$12	\$12	\$16	\$16	\$16	\$18	\$18	\$18	\$22	\$22	\$22	\$26	\$26	\$32	\$32	\$38	\$38	\$46	\$46

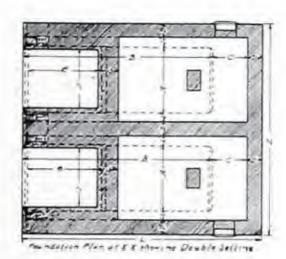
Openings in firebox for coil, \$4.00 list per Boiler.

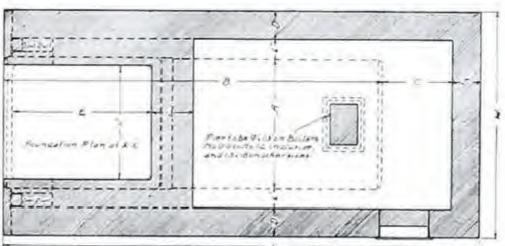
SAFFORD-KEWANEE FIREBOX AND SMOKELESS BOILERS ADDITIONAL SPECIFICATIONS SAFFORD-KEWANEE BRICK-SET FIREBOX BOILERS

Number	00	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Diameter Boilerinches Length Boiler over allfeet		$\frac{24}{7\frac{1}{2}}$	30 6½	30 7½	30 8½	36 7½	36 9	$\frac{36}{10\frac{1}{2}}$	42 8½	42 10	$\frac{42}{11\frac{1}{2}}$	48 10½	48 12	48 13½	54 14	54 16½	$60 \\ 15\frac{1}{2}$	60 18	66 16	66 18	72 16	72 18
Width of Fireboxinches Length of Fireboxinches Height of Fireboxinches	20	19 26 30	24 26 35	24 32 35	24 38 35	30 32 41	30 38 41	30 44 41	36 38 43	36 44 43	36 50 43	42 44 47	42 50 47	42 56 47	48 56 49	48 62 49	53- 62 54	53 68 54	59 62 59	59 68 59	65 68 64	65 74 64
Heating Surfacesquare feet Square feet of Steam capacity as rated for each square foot of heating surface		98 7.1						260 7.7				390 8.9										1325 9.8
Area of Gratesquare feet Square feet of heating surface for each square foot of grate	200	3.4 29	4.3 27	5.3 25	6.3 23	6.7 28	8.0	9.2 28	9.5 27	11.0 27	12.5 28	12.8 30	14.6 30	16.3 30	18.7 31	20.6 34	22.8 32	25.0 34	25.4 38	28.0 39	30.7 38	33,4 40
Diameter of Breechinginches Diameter of Stackinches Minimum height of Stackfeet	10	10 10 40	12 12 40	14 12 40	16 14 40	16 14 40	18 16 40	18 16 45	20 18 45	20 18 45	22 20 45	22 20 45	24 22 50	24 22 50	28 26 50	28 26 50	32 30 55	32 30 55	32 30 60	32 30 60	36 34 60	36 34 60
Diameter of Stack for 2 Boilers, inches Minimum height of Stack for 2 Boilers 							****		24 50	26 50	28 50	28 50	30 50	32 50	34 55	34 60	36 60	36 70	36 70	38 70	40 70	42 70
Size of Steam opening (one)inches Size of Return (one)inches Size of Safety Valveinches Number and size of Supply and Re- turn openings for Waterinches	11/2	2 2	21/2	2	21/2		1 - Y-E		6 4 3 2–5	6 4 3 2-6	6 4 3½ 2-6		0-3			7 5 4 2-7	100	100	17.7	$\begin{array}{c} 8 \\ 6 \\ 2 - 3\frac{1}{2} \\ 2 - 10 \end{array}$	13.13	
Height of Water lineinches Height from floor to top of brick work		48 64	53 70	53 70	53 70	59 77	59 77	59 77	61 83		61 83	65 90	65 90	65 90	67 96	67 96	75 108	75 108		80 114	85 120	

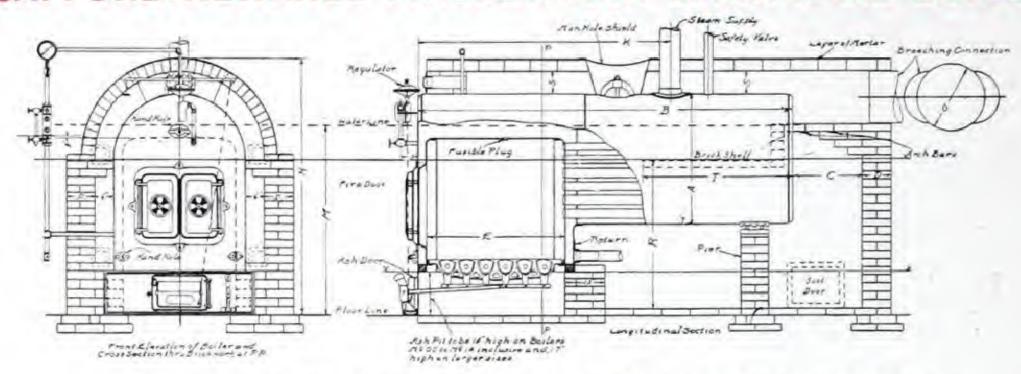
For Setting Plans and other measurements, see pages 83 and 84.







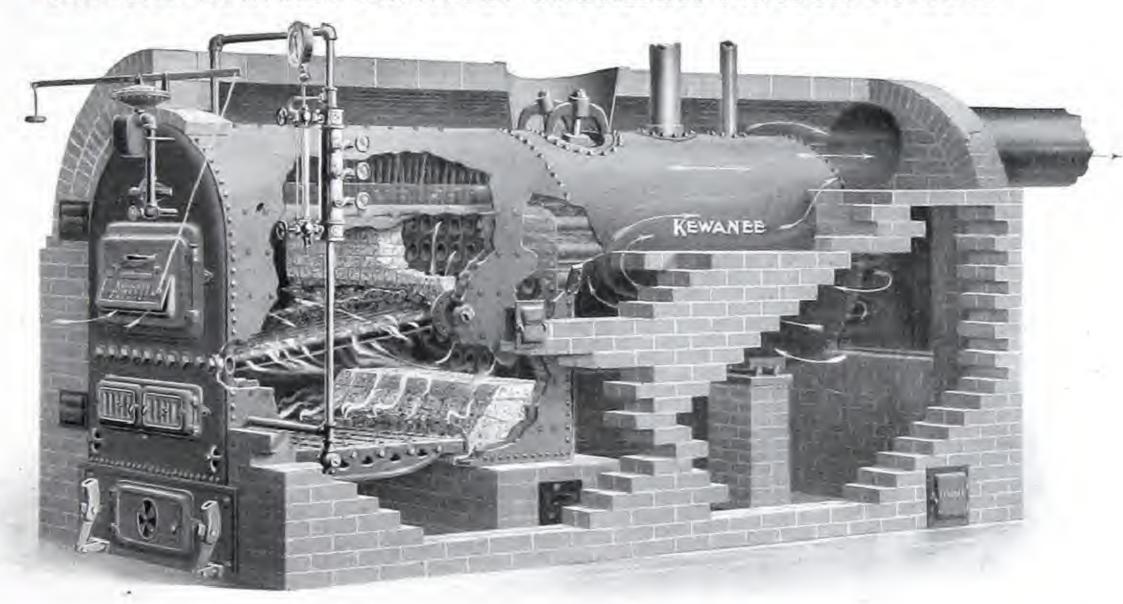
Section Firebox Boiler Showing Setting of Safford-Kewanee Brick-Set Firebox Boilers. Stack Connection at Front.



Section of Firebox Boller showing Setting of Safford-Kewanee Brick-set Firebox Bollers. Stack Connection at Rear.

	00	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Diameter Boiler "A"inches	24	24	30	30	30	36	36	36	42	42	42	48	48	48	54	54	60	60	66	66	72	72
Length Boiler "B"feet	51/2	71/2	61/2	71/2	81/2	71/2	9	101/2	81/2	10	111/2	101/2	12	131/2	14	161/2	151/2	18	16	18	16	18
Rear Space "C"inches		14	17	17	17	17	17	17	22	22	22	22	22	22	24	24	24	24	24	24	28	28
Thickness Wall "D",inches		9	9	9	9	9	9	9	9	9	9	9	9	9	13	13	13	13	13	13	13	13
Length Grate "E"inches	20	26	26	32	38	32	38	44	38	44 37	50	44	50	56	56	62	62	68	62	68	68	74
Width Ash-Pit "J"inches	19	19	25	25	25	31	31	31	37	37	37	43	43	43	49	49	54	54	60	60	66	66
Total Height "H"inches		64	70	70	70	77	77	77	83	83	83	90	90	90	96	96	108	108	114	114	120	120
Location Supply "K"inches	17	30	21	24	31	12	20	29	16	28	34	30	43	43	48	54	49	62	41	55	45	53
Flue Space "S"inches	6	6	6	6	6	7	7	7	7	7	7	8	8	8	8	8	10	10	10	10	10	10
Total Length "L"feet, ins.														7 16-1			18-7	21-1	19-1	21-1	19-5	21-
Total Width "W"feet, ins.																			8-8	8-8	9-2	9-5
Total Width "R"feet, ins.	8-3	8-3	9 - 3	9-3	9-3	10-3	10 - 3	10-3	11 - 3	11 - 3	11-3	12 - 3	12 - 3	3 12-3	14 - 3	14-3	15-3	15-3	16-3	16-3	17-3	17-
Common Brick for one Boiler.	1400	1500	16001	1700	1800	2000	2300	2400	2500	2800	3000	3200	3500	3700	5500	5700	6000	6500	6700	7100	7500	8000
Common Brick for two Boilers																	10500	11300	11600	124G0	13000	14000

SAFFORD-KEWANEE BRICK-SET SMOKELESS FIREBOX BOILERS



Cut shows Boiler erected, with portion of brick-work removed. For specifications, list prices, etc., see following pages.

SPECIFICATIONS AND PRICE LIST—SAFFORD-KEWANEE BRICK-SET SMOKELESS FIREBOX BOILERS

These Boilers will heat all the radiation shown by their capacity

Number	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
Capacity, Steam, sq.ft. Capacity, Water, sq.ft.		1900 3100	2200 3600	2500 4100	2900 4700	3300 5300	3800 6200	4400 7200	5000 8200	5800 9500	7000 11400	8200 13400	9500 15500	10500 17000	12000 19600	13000 21000	15000 24500
Code, Steam Boiler, complete	Heal Hide	Heap Hie	Hear Hill	50.5	Heed Hinge				Henna Hisk	1	Herf Hit	Herp Hitch		024	Herod Hilt	Heron Hing	
Price Steam Boiler with Castings and Tools	\$590 20	\$620 20	\$654 20	\$710 24	\$770 24	\$840 24	\$940 24	\$1000 24	\$1064 30	\$1300 30	\$1400 30	\$1700 40	\$1850 40	\$2050 40	\$2260 40	\$2550 44	\$2800 44
Price Water Boiler with Castings and Tools	\$605 4800	\$635 5200	\$670 5700	\$725 6100	\$785 6700	\$855 7200	\$955 8400			\$1320 12300	\$1420 13600	\$1725 16000	NO COLUMN AND A SECOND		MEDICAL CO. C.	\$2590 22400	

Extras and Changes—add to above list

For longer Shell, each foot or fraction of a foot	\$19	\$19	\$19	\$23	\$23	\$23	\$32	\$32	\$32	\$40	\$40	\$50	\$50	\$ 60	\$60	\$70	\$70
Wrought iron space rings and extra stays and braces for 100					ar boil	ers lar	ger tha										
lbs. working pressure	\$68	\$70	\$72	\$78	\$82	\$86	\$92	\$96	\$100	\$115	\$125	\$90	\$100	\$105	\$115	\$125	\$135

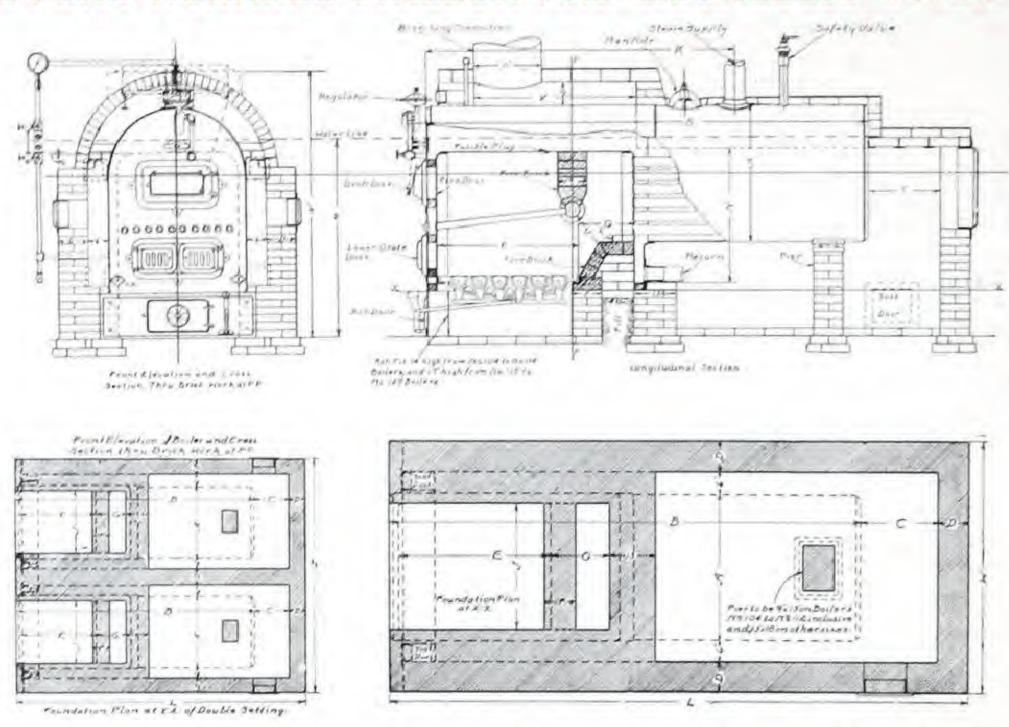
Openings in Firebox for coil, \$4.00 list per Boiler.

SPECIFICATIONS SAFFORD-KEWANEE BRICK-SET SMOKELESS BOILERS

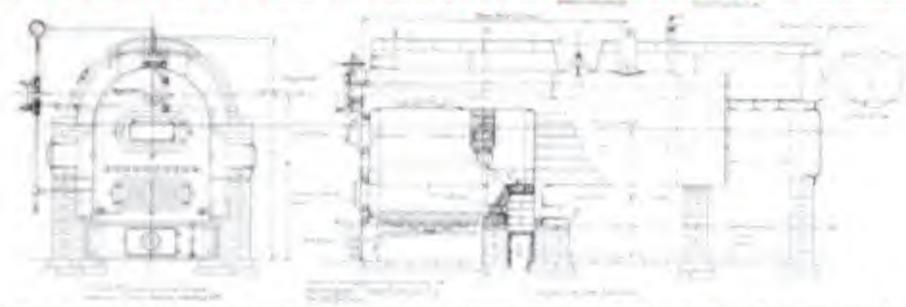
These boilers will heat all the radiation shown by their rated capacity.

Number	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
Diameter Boiler inches Length Boiler over all feet-inches		36 10-2	36 11-7	42 9-10	42 11–4	42 12-11	48 12-4	48 13–10	48 15 -4	54 15-10	54 18-4	60 17-10	60 20 -4	66 18-4	66 20 -4	72 18-4	72 20–4
Width of Fireboxinches Length of Fireboxinches		30 51	30 57	36 54	36 60	36 66	42 66	42 72	42 78	48 78	48 84	53 90	53 96	59 90	59 96	65 96	65 102
Heating Surface square feet		213 8.9	249 8.8	252 9.9	291 9.9	335 9.9	387 9.8	449 9.8	492 10.0	580 10.0	692 10.1	735 11.1	862 11.0	968 10.8	1092 11.0		
Area of upper gratesquare feet Square feet of heating surface for each square foot of grate		7.1	8.3	8.5	10.0 29	11.3	11.7 33	13.1 34	14.9 33	17.0 34	19.0 36	21.0 35	23.2	23.4	25.8 42	28.4 40	31.1 42
Diameter of Breechinginches Diameter of Stack	18	20 18 40	22 20 40	22 20 50	22 20 50	24 22 50	24 22 50	27 24 55	27 24 55	30 28 60	30 28 60	34 32 60	34 32 60	36 34 70	36 34 70	38 36 70	38 36 70
Diameter of Stack for two Boilers				26 60	28 60	30 60	30 60	32 60	32 60	34 70	36 70	38 70	38 75	40 75	42 80	44 80	46 80
Size of Steam opening (one) inches Size of Return (one) inches Size of Safety Valve inches Number and size of Supply and Return openings for Water inches	3 2½	10.00			6 4 3 3	6 4 3 5 2-6	6 4 3 2-6	6 4 3½ 5 2-7	1		7 5 4 2-7	7 5 4 7 2-8	7 5 2-3 2-8		8 6 2-3½ 2-10		1000
Height of Water Line inches Height from floor to top of brick work,ins.		59 76	59 76	61 82	61 82	61 82	65 89	65 89	65 89	67 95	67 95	75 107	75 107	80 113	80 113	86 119	86 119

For Setting Plans and other measurements see pages 88 and 89.



Section of Smokeless Boiler Showing Setting of Safford-Kewanee Brick-Set Smokeless Firebox Boilers. Stack Connection at Front.



Section of Smakeless Bailer showing Setting of Safford-Kewanes Brick-Set Smakeless Firebox Bollers.

Stack Connection at Rear

						STRCX	wan	MOUTH	311 31	HERF								
		100	100.	13369	107	108	100	1,137	1.1.1	113	130	114	Uá	118	117	178	3.10	120
Discounter Builty A	Otto Darw	36	200	361	42	1.2	4.2	1.8	1/4	4.96			150		-049	797	9-1	9.9
Lorsgelt Builter W.	FROM LINE	5-7	100 3	11-7	70-1U	11-6	12-11	12-4				11 11	17 10		12-1	201-4	124	200 1
Rear Space C	con hew	17	1.7	1.7	2.3	(23)		99	907	22	23	2.4	9.1	01	114	13	Fig.	-
Phickness Wall II	COO. Picesti	19-	16	70	701	79	- 0	19	- 9	- 18	LV	1.0	177	174	131	1.4	43.3	1.0
Length Grate "E"	one them		17	3.3	37	6.5		121		55	0.5	79.1.	75.1	67.	-100	717	67.7	7.0
Widely of Ask-Pir]	His Tierr	33.	181	311	37	167	17	Like		4.4	110	10	541	54	100	100	66	2007
Thickness Brokes Wall	F In-	1.09	0	73	10	- 9	11.	-3.3	(3)	3.4	Die	18	3.36	130	18	18.	1.5	15
From Course to tube also										7.7								0.00
	THE THERE	1.8	1.4	1.1	17	12	1.7	23	:35	23	24	324	29)	day	.200		213	-30
Total Beight 'H	Inches	716	76	7.0	4.2	302	82		40	50			3197	DOM:	113	113	170	2170
Location Supply &	ft. one.3	0-11										1.5		3.3	11.19	4.8	280-38	1 2
Top Flore Some 5	Truc flores		7	7.			7				70		10.	0.0	1000	315	10	10.
Total Length "L"	Fl., ben	10-7	12.3	12-0										23. 5	21.5	23.5	21:0	24 0
Tomal Wishen "W"	Ti., tmr.	0-6	0.16	5-19	.6.	W	6	15.47	0.0	0.0	7.6	2.5	2.3	0-2			9.3	
Total Width "R"	Di. Ime.	113-3	135-3	100-3	11 1	31.0	11.0	100-0	12-3	100	LE-T.	14.3	15-0	13-3	100 3		17.3	17.1
Common Brick for one I													7400	71200		9600		
Concerned Brick for runs																	9100	DOM:
																	1,6200	
For Bruck for our Boile				72			(9)			1109	1.70	1.50				230	711/8/1	31367
From Errork for two Books	11.0	13.5	3.64	1.65	1362	180	(.50)	270	210	210	3007	300	3760	3201	460	4.00	(18.8)	TAX

SAFFORD-KEWANEE PORTABLE FIREBOX BOILERS

WE have pleasure in presenting to the Architects, Engineers and the Steam-heating Trade of Canada, and all those interested in an efficient, economical and permanent boiler for the heating of large public and private buildings, a complete line of self-contained steam and hot water steel heating boilers, both in the direct draft, and smokeless down-draft types.

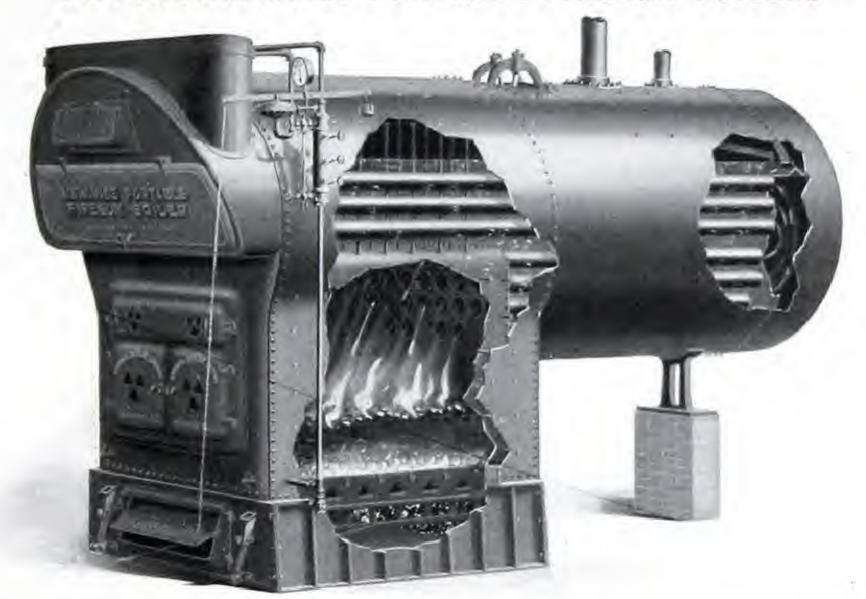
The essential feature of the Safford-Kewanee Portable Firebox Boilers is that the fire travel is all within the boiler. The hot gases pass from the fire box through the lower tubes into the rear chamber and then through the upper tubes to the smoke box at the front, from which the smoke pipe connection is made. These tubes are all surrounded by water and present a large heating surface, ensuring a thorough absorption of the heat from the gases passing through.

Safford-Kewanee Portable Firebox Boilers are built of the best steel made—mild, openhearth steel of a tensile strength of 60,000 pounds per square inch. They are built of the same material and in the same manner as high-pressure power boilers.

Safford-Kewanee Portable Firebox Boilers burn any kind of fuel, hard, soft and lignite coal, coke and gas.

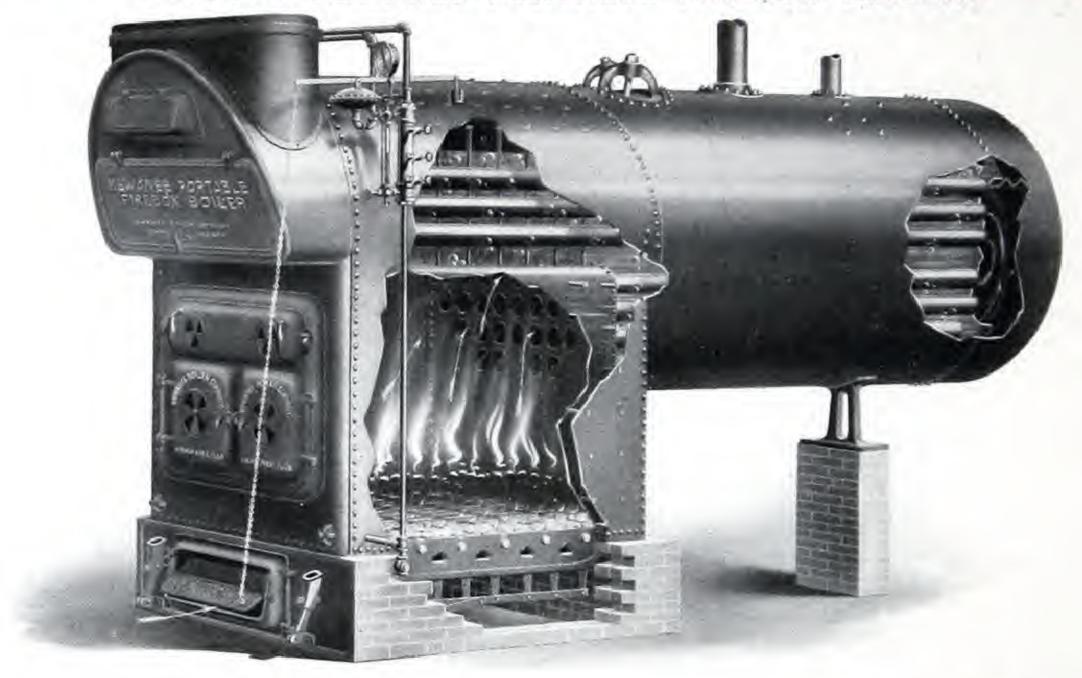
The Safford-Kewanee Portable Smokeless Boiler will burn soft coal smokelessly,—and in doing so, utilizes the full value of the coal consumed. The essential features are the two grates, one above the other. The upper one is a water grate. The lower one is an ordinary shaking grate.

SAFFORD-KEWANEE PORTABLE FIREBOX BOILERS



Boilers No. 414 (and smaller) made as shown above. Iron Ash-pits (as illustrated) furnished with Boilers No. 409 and smaller.

SAFFORD-KEWANEE PORTABLE FIREBOX BOILERS



Boilers No. 415 (and larger) made as shown above. Boilers No. 410 (and larger) set on brick foundations as illustrated.

SPECIFICATIONS AND PRICE LIST-SAFFORD-KEWANEE PORTABLE FIREBOX BOILERS

Capacity, Water sq. feet S00 700 900 1100 1300 1500 1800 2100 2400 2800 3300 3800 4300 4800 5500 6000 7000 8000 9000 10000 12000 13000 Capacity, Water sq. feet S00 1100 1500 1800 2100 2500 2900 3400 4000 4600 5400 6200 7000 7800 9000 9800 11400 13000 15000 17000 20000 22000 Code, Steam Boiler, complete...

Code, Water Boiler, complete...

Price Steam Boiler, castings and Tools...

\$300 \$320 \$360 \$380 \$400 \$440 \$470 \$500 \$600 \$650 \$700 \$800 \$870 \$820 \$870 \$920 \$1000 \$1070 \$1300 \$1450 \$1700 \$1850 \$2000 \$2200 \$1000 \$1070 \$1300 \$1450 \$1700 \$1850 \$2000 \$2200 \$1000 \$1070 \$1300 \$1450 \$1700 \$1850 \$2000 \$2200 \$1000 \$1070 \$1300 \$1450 \$1700 \$1850 \$2000 \$2200 \$1000 \$1070 \$1300 \$1450 \$1700 \$1850 \$2000 \$2200 \$1000 \$1070 \$1300 \$1450 \$1700 \$1850 \$2000 \$2200 \$1000 \$1070 \$1300 \$1450 \$1700 \$1850 \$2000 \$2200 \$1000 \$1070 \$1300 \$1450 \$1700 \$1850 \$2000 \$2200 \$1000 \$1070 \$1300 \$1450 \$1700 \$1850 \$2000 \$2200 \$1000 \$1070 \$1300 \$1450 \$1700 \$1850 \$2000 \$2200 \$1000 \$1070 \$1300 \$1450 \$1700 \$1850 \$2000 \$2200 \$1000 \$1070 \$1300 \$1450 \$1700 \$1850 \$2000 \$2200 \$1000 \$1070 \$1300 \$1450 \$1700 \$1850 \$2000 \$2200 \$1000 \$1070 \$1300 \$1450 \$1700 \$1850 \$2000 \$1070 \$1850 \$2000 \$1070 \$1850 \$1700 \$1850 \$2000 \$1070 \$1850 \$170

Extras and Changes-add to above lists

For longer shell, each foot or fraction of a foot	\$20	\$20	\$30	\$30	\$30	\$40	340	\$40	850	\$50	\$50	870	\$70	\$70	\$80	\$80	\$80	\$80	\$90	\$90	\$100	\$100
For longer Firebox, in- cluding grate, each six inches		\$24	\$30	\$30	\$30	\$40	\$40	840	\$46	\$46	\$46	\$60	\$60	\$60	\$70	\$70	\$80	\$80	\$100	\$100	\$120	\$120

Approximate weight, lbs. 2900 3200 4100 4500 4900 5500 6000 6500 7600 8600 9100 10000 12000 13000 14000 16000 17500 20000 22000 23000 24000

Opening in Firebox for Coil \$4.00 list per boiler.

Lists for Boilers Nos. 0000 to 409 inclusive, include cast iron base.

Steam Trimmings consist of:—Steam Gauge, standard water column with water gauge and try cocks, safety valve as required by provincial regulations for low pressure heating boilers, and automatic damper regulator.

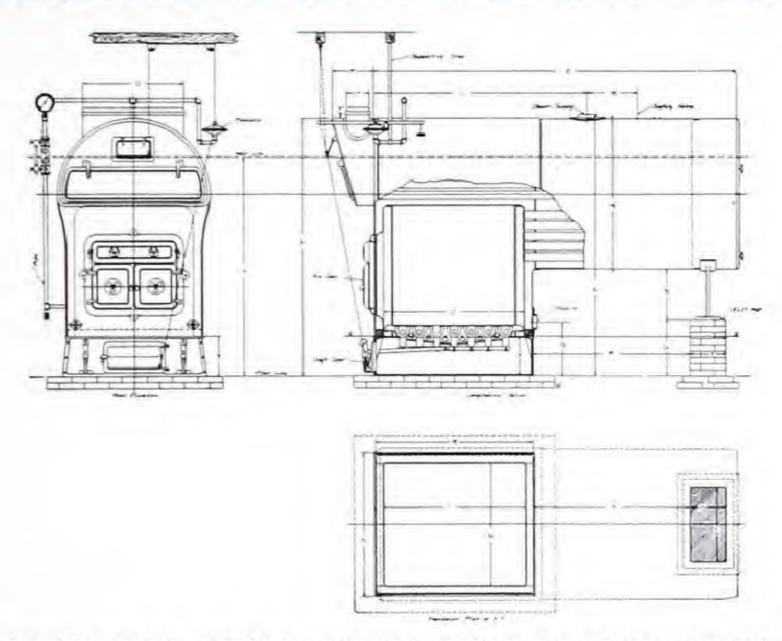
Firing Tools consist of:-Hoe, poker, slice bar and standard tube cleaner.

For cost of covering with Mineral Wool Blocks, or Asbestos Sponge Felt, see page 257.

ADDITIONAL SPECIFICATIONS-SAFFORD-KEWANEE PORTABLE FIREBOX BOILERS

These Boilers will heat all the radiation shown by their capacity.

Number	0000	000	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420
Diam. of Boiler inches Length of Boiler feet and ins	30 5-5	30 6-5	36 5-11	36 6-5	36 7-0	42 6-8	42 7-8	42 8-7	48 8-3	$^{48}_{9-2}$	48 10-9	54 9-8	54 10-9	54 11-9	60 12-1	60 13-3	60 14	60 15-10	66 15-5	66 17-0	72 15-7	72 17-2
Width of Firebox inches Length of Firebox inches Height of Firebox inches	20		24 26 35	32		30 32 38	30 38 38		36 38 41	36 44 41	36 50 41	42 44 44	42 50 44	42 56 44	48 56 49	48 62 49	53 56 49	53 62 49	59 62 52	59 68 52	65 68 54	65 74 54
Heating surface square ft.	75	89	118	128	146	187	219	248	281	320	375	422	477	528	583	642	701	804	905	1003	1202	1334
Area, Gratesquare feet	2.5	3.3	4.3	5.4	6 3	6.3	8.0	9.2	9.5	11.0	12.6	13.0	14.7	16.4	18.8	20.0	20.7	22.1	25.5	27.9	30.8	33.5
Diameter of Breechinginches Diameter of Stackinches Minimum height of Stackfeet	12	12	16 14 40	14	16 14 40		16 14 40	16 14 45	20 18 50	20 18 50	20 18 60	22 20 60	22 20 60	22 20 70	26 24 70	26 24 70	26 24 70	26 24 70	28 26 70	28 26 80	32 30 90	32 30 90
Diameter Stack 2 Boilers, inches Minimum height of Stack 2 Boilers feet					18 45		20 45		24 50	24 50	24 60	26 60	26 60	26 70	32 70	32 70	32 80	32 80	34 80	34 90	40 90	40 90
Size of Steam Opening (1), ins. Size of Return Opening (1), ins. Size of Safety Valve Opening, inches									6 4 3					6 4 3½	7 5 4	7 5 4	7 5 4	7 5 2-3	8 6 2-3½	8 6 2-3½	8 6 2-31/2	8 6 2-4
Number and Size of Supply and Return Openings for Water Boilerinches		1-4	1-6	1-6	1-6	1-6	1-6	1-6	2-5	2-5	2-5	2-6	2-6	2-6	2-7	2-7	2-7	2-7	2-8	2-8	2-10	2-10
Height of Water Lineinches Height Floor to Top of steam supplyinches						67 78		67 78		71 84		74 90		-		83 100		86 103	90 109	90 109	96 115	96 115



SETTING PLAN SAFFORD-KEWANEE PORTABLE FIREBOX BOILERS

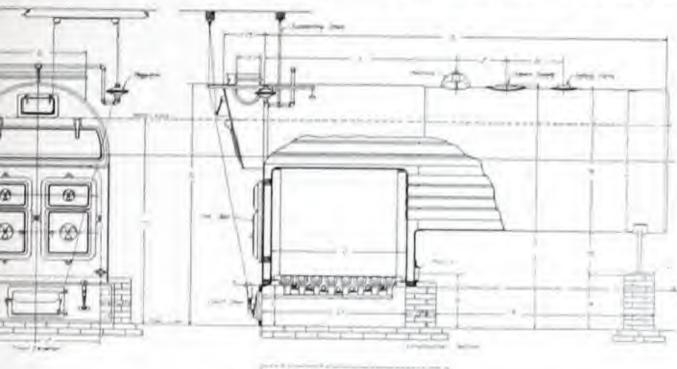
Note: Boilers 410, 411, 412, 413 and 414 are constructed as shown above, but are set on brick ash-pit as shown on page 92.

SAFFORD-KEWANEE FIREBOX AND SMOKELESS BOILERS SETTING MEASUREMENTS SAFFORD-KEWANEE PORTABLE FIREBOX BOILERS

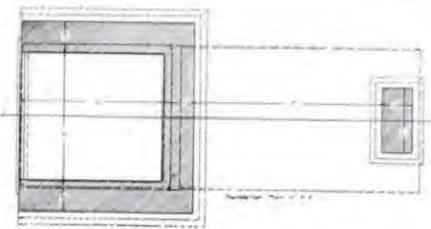
Number of Boiler	0000	000	401	402	403	404	405	406	407	408	409	410	411	412	413	414
Diameter of Boiler, inches	30 5-5	30 6-5	36 5-11	36 6-5	36 7-0	42 6-8	42 7-8	42 8-7	48 8-3	48 9-2	48 10-9	54 9-8	54 10-9	54 11-9	60 12-1	60 13-3
Length of Ash Pit, inches	Cast					rnishe					aller t		53 No. 4		59	65
Width of Ash Pit, inches	28	34 28	34 34	40 34	46 34	40 40	46 40	52 40	46 46	52 46	58 46		A Comment of the Comm	43 410 a ck As		100
From Ash Pit to Pier, inches		33	27	27	28	30	36	41	39	44	57	45	52	58	62	70
Height of Pier, inches		12 61	14 69	14 69	14 69	16 77	16 77	16 77	17 83	17 83	17 83	20 92	20 92	20 92	20 98	20 98
From front of boiler to steam supply, ft. & in., . J From Steam Supply to Safety Valve, inches K			3-6 10	4-0 10	4-7 10	4-0 13	4-7 13	5-3 13	4-8 13	5-3 14	6-3 18	5-6 16	6 -4 18	7-11 14	8-0 16	8-8 18
Height of Water Line, inches	55 9	55 9	60 11	60 11	60 11	67 12	67 12	67 12	71 14	71 14	71 14	74 15	74 15	74 15	83 17	83 17
Width Breeching Connection, inches N Length of Breeching Connection, inches O	6 14	6 14	8 18	8 18	8 18	8 22	8 22	S 22	8 28	8 28	8 28	8 36	8 36	8 36	10 42	10 42
Height of Steam Supply, inches		62 18	70 18	7() 18	70 18	78 19	78 19	78 19	81 19	84 19	84 19	90	90 19	90 19	100 20	100
Number of Common Brick	150	170	210	220	230	250	260	290	290	320	330	650	700	750	800	850
Outside Surface to be Covered, square feet	50	55	65	70	75	80	90	105	115	130	150	155	175	185	190	220

Boilers Nos. 410, 411, 412, 413 and 414 are constructed as shown on page 91, but are set on brick base instead of cast iron ash pit. For cost of covering with Mineral Wool Blocks, or Asbestos Sponge Felt, see page 257.

SETTING MEASUREMENTS SAFFORD-KEWANEE PORTABLE FIREBOX BOILERS

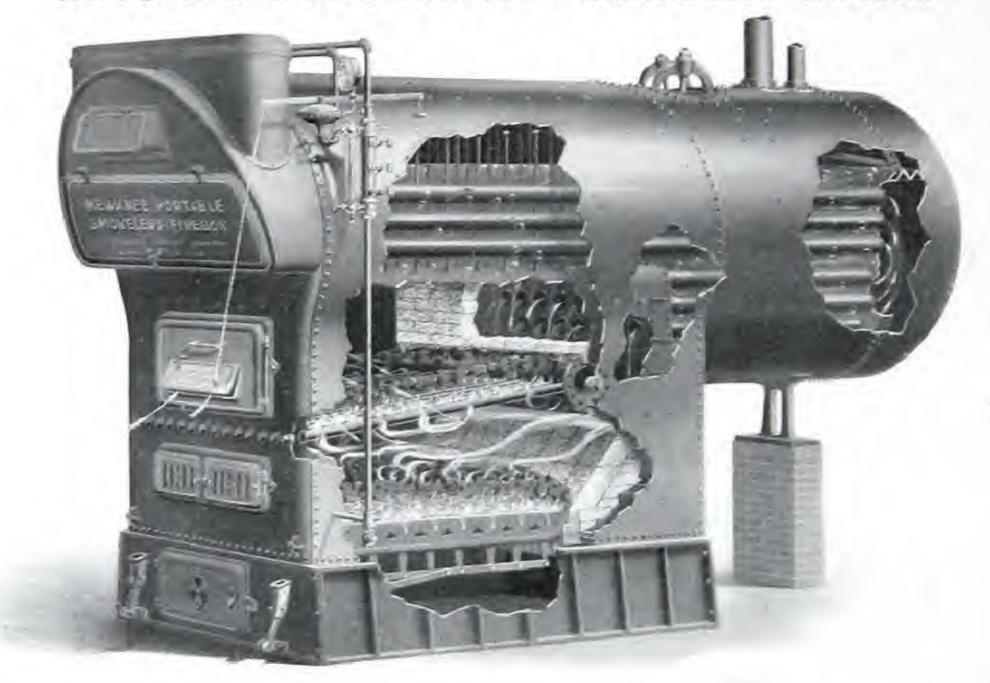


FORD-KEWANEE PORTABLE REBOX BOILERS



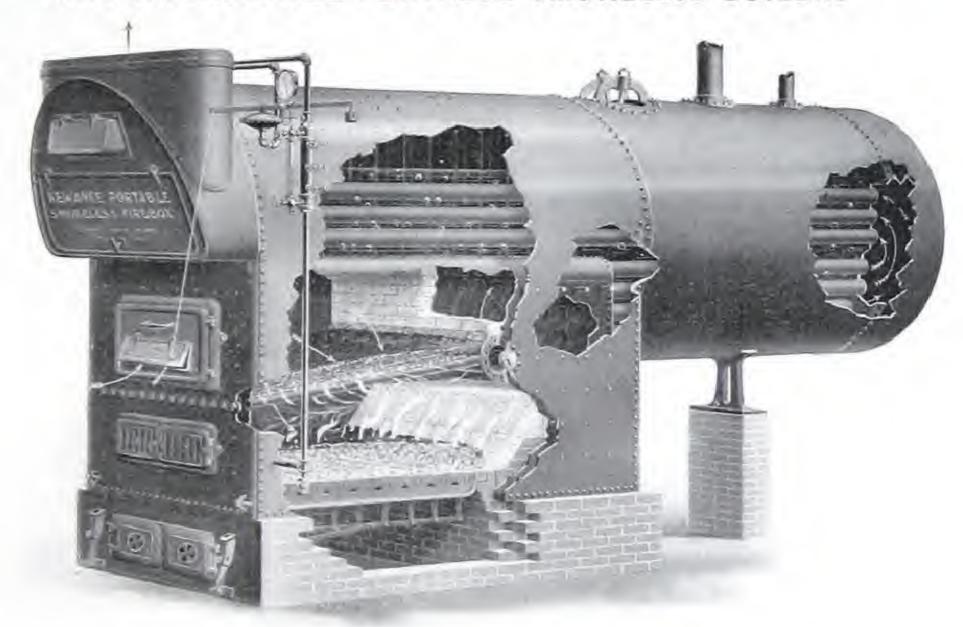
Number	415	416	117	118	419	420
Diameter of Boiler, inches A Length of Boiler, feet and inches B	60	15-10	15-5		72 15-7	
Length of Ash Pit, inches. D. Width of Ash Pit, and Firebox.		66	(0)	72	72	78
inches E	54	74	60.	160	66	66
From rear of Ash Pit Wall to Pier feet and inches. F Height of Pier, inches G	6-7	7-11	7 5 23	8-3	6-11 25	7-11
Height to Top of Shell, inches H	101	101	107	107	113	113
From Front of Boiler to Manhole, feet and inches. I Manhole to Steam Supply, ins. J Steam Supply to Safety Valve, inches	115 21	7 <u>2</u> 27	7 2 20 30	7. 8 30 26	7-8 24 24	30
Height of Water Line, inches L Length Smoke Box, inches M Width Breeching Connection.	86 17	80 17	90) 1.8		96 20	96 20
Length Breeching Connection.	10	10.	10.	-	12	12
inches	42.	12	18	48	38	58
Height Steam Supply, inches P Height Return, inches Q	$\frac{103}{23}$	103 23	100 23	109 23	115	115 23
Number of Common Brick	100	1170	1230	1300	1350	1430
Outside Surface to be covered, sq. feet	250	280	290	310	315	345

SAFFORD-KEWANEE PORTABLE SMOKELESS BOILERS



Boilers No. 314 (and smaller) constructed as above. Iron Ash-pit (as illustrated) furnished with Boilers No. 309 and smaller.

SAFFORD-KEWANEE PORTABLE SMOKELESS BOILERS



Boilers No. 315 (and larger) constructed as shown above. Boilers No. 310 (and larger) set on brick foundation as illustrated.

SPECIFICATIONS AND PRICE LIST-SAFFORD-KEWANEE PORTABLE SMOKELESS BOILERS

These Boilers will heat all the radiation shown by their rated capacity

					10.0		cut a		rauti		311011	,	ciicii	Tates	- cape	,						
Number	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322
Capacity, Steam, sq.ft. Capacity, Water, sq.ft.	1000 1600	1200 2000	1500 2400	1900 3100	2100 3400	2500 4000	3000 4800	3500 5700	4000 6500	4500 7300	5000 8200	5500 9000			7500 12200		CREATE STATE OF THE STATE OF TH	Office Add Tips State of		2 2 2 2 2 2 2 2 2 2 2		BB SALES
Code, Steam Boiler, complete Code, Water Boiler, complete	Park Peace	Pad Pane	1		Palm y Pebble																	
Price Steam Boiler, Castings and Tools	\$500	\$530	\$560	\$680	\$730	\$780	\$900	\$950	\$1000	\$1100	\$1200	\$1300	\$1500	\$1650	\$1850	\$2100	\$2300	\$2400	\$2600	\$2800	\$3200	\$340
Price, Steam Trimm'gs Price, complete							\$24 \$924	\$24 \$974	\$24 \$1024	\$24 \$1124	\$30 \$1230	\$30 \$1330	\$30 \$1530	\$30 \$1680	\$30 \$1880	\$30 \$2130		\$40 \$2440				\$5(\$345(
Price Water Boiler, Castings and Tools	\$520	\$550	\$580	\$700	\$750	\$800	\$920	\$970	\$1020	\$1120	\$1220	\$1320	\$1520	\$1680	\$1880	\$2150	\$2350	\$2450	\$2650	\$2850	\$3250	\$3450
Approx. weight, lbs	5300	5600	6000	6500	6800	7200	8400	9200	10000	11000	12000	13000	14000	15000	19000	20000	22000	23000	26000	27000	29000	32000
					E	xtras	and	Chan	ges—a	add to	o abo	ve lis	ts									
For longer Shell each foot or fraction of a foot	20.0	\$30	\$30	\$40	\$40	\$40	\$50	\$50	\$50	\$70	\$70	\$70	\$80	\$80	\$80	\$80	\$90	\$90	\$100	\$100	\$120	\$12
For longer Firebox, in- cluding Grate, each six inches		\$50	\$50	\$60	\$60	\$60	\$80	\$80	\$80	\$90	\$90	\$90	\$120	\$120	\$120	\$120	\$140	\$140	\$160	\$160	\$180	\$18

Opening in Firebox for Coil \$4.00 list per Boiler. List for Boilers Nos. 301 to 309 inclusive, include Cast Iron Base.

Steam trimmings consist of:—Steam Gauge, standard water column with water gauge and try cocks, safety valve as required by provincial regulations for low pressure heating boilers, and automatic damper regulator. Firing tools consist of hoe, poker, slice bar and standard tube cleaner.

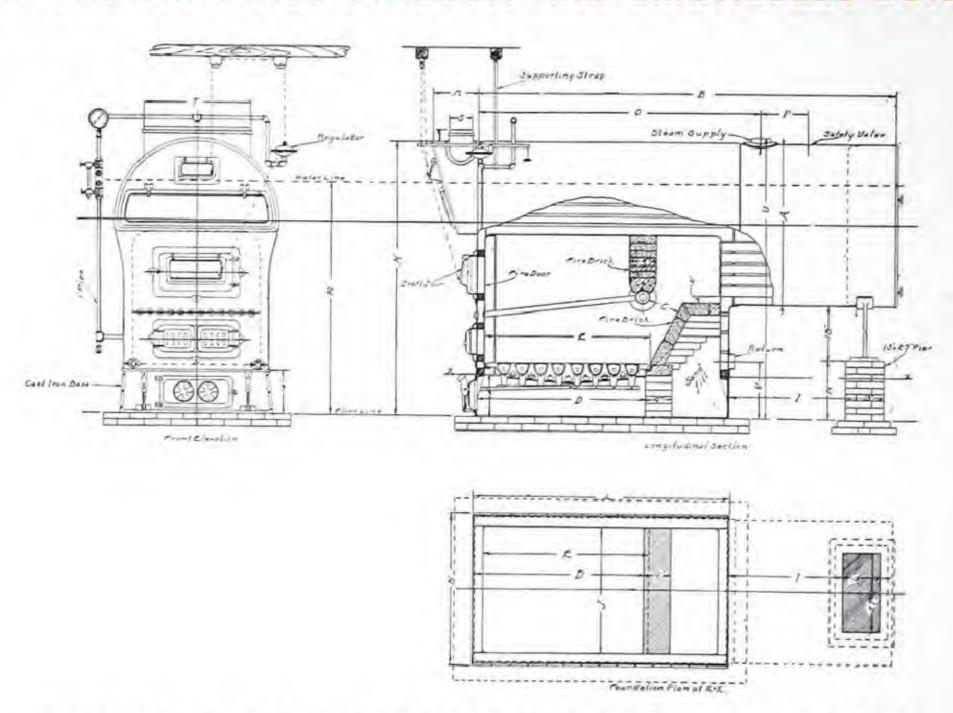
For cost of covering with mineral wool blocks or asbestos sponge felt, see page 257.

ADDITIONAL SPECIFICATIONS—SAFFORD-KEWANEE PORTABLE SMOKELESS BOILERS

These Boilers will heat all the radiation shown by their capacity

Number	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322
Diameter of Boilerinches Length Boiler feet-inches	36 7-5	36 7-9		42 7-9						54 10-7			60 12-7	60 13-7	60 14-11	60 15–11	66 15-6	66 17-6	72 16-3	72 17-7	78 17-6	78 18-6
Width of Firebox,inches Length of Fireboxinches		24 48	24 51	30 48	30 51		36 54			42 72	42 78	42 84	48 78	48 84	53 90	53 96	59 90	59 96	65 96	65 102	71 102	108
Heating Surfacesquare ft.	155	161	180	211	236	261	287	341	380	425	473	528	580	630	708	760	846	981	1183	1308	1465	1563
Area Upper Grate, sq. feet	4,4	5.0	5,5	6.0	6.8	8.0	8.8	10.1	11.4	12.9	14.7	16.5	17.0	18.5	20.0	21.4	23.5	25.9	28.5	29.9	32.6	34.6
Diameter Breeching . inches Diameter Stack inches Minimum height Stack ft.	14	14 14 40	16 14 45	16 14 50	16 14 50	16 14 50	20 18 60	20 18 60	20 18 70	22 20 75	22 20 75	22 20 80	26 24 80	26 24 80	26 24 80	26 24 80	28 26 80	28 26 90	32 30 90	32 30 90	36 32 100	36 32 100
Diameter Stack 2 Boilers, 		18 40	18 45	20 50	20 50	20 50	24 60	24 60	24 70	26 80	26 80	26 80	32 80	32 80	32 85	32 85	34 90	34 90	40 90	40 90	44 100	100
Size Steam Opening (1), ins. Size Return Opening (1), ins. Size Safety Valve Opening, inches	21/2	5 2½ 2	1207	1 23	6 3 21/2	6 3 21/2	6 4 3	6 4 3	6 4 3	6 4 31/2	6 4 31/2	6 4 316	7 5 4	7 5 4	7 5 4	7 5 4	8 6 2-3	8 6 2-3½	8 6 2-3½	8 6 2-3½	8 6 2-3½	2-4
Number and size of Supply and Return Openings for Water Boiler		1-6	1-6	1-6	1-6	2-6	2-0	2-0	3 2-6	2-6	2-7	2-7	2-7	2-7	2-7	2-8	2-8	2-10	2-10	2-10	2-10	2-10
Height of Water Line inches Height Floor to Top of Shell inches		63 72	63 72	67 77	67 77	67 77	71 83	71 83		74 89	74 89	164	83 98	83 98	86 101	86 101	90 107	90 107	96 113	96 113	97 115	97

For Setting Plans and other measurements see pages 102 to 105.
For cost of covering with Mineral Wool Blocks, or Asbestos Sponge Felt, see page 257.



SETTING PLAN SAFFORD-KEWANEE PORTABLE SMOKELESS BOILERS

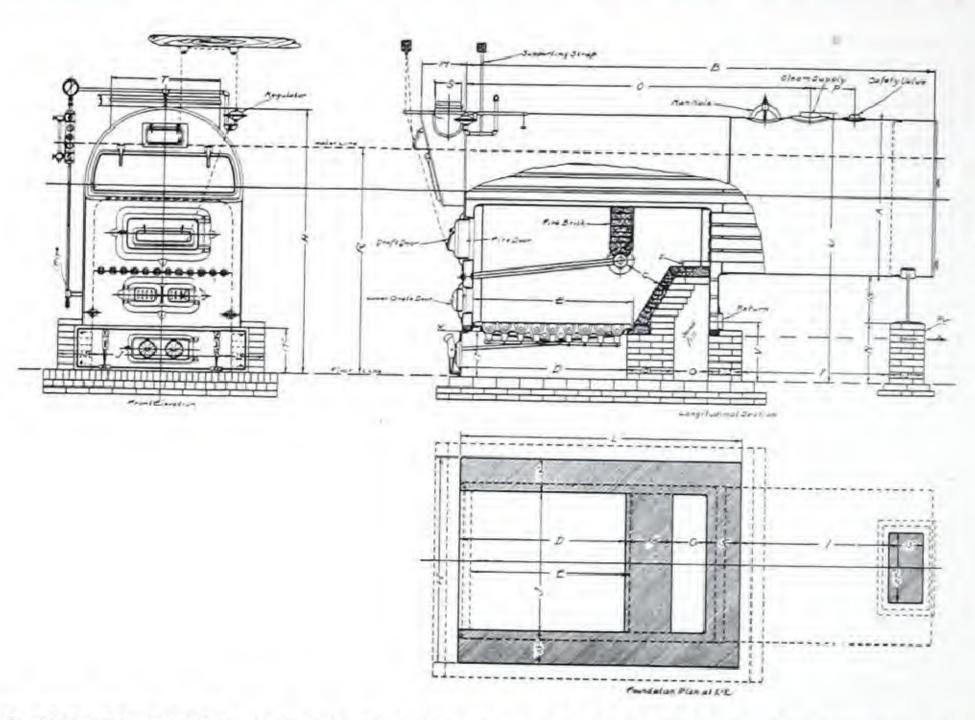
Note:-Boilers 310, 311, 312, 313 and 314 are constructed as above, but are set on brick ash-pit as shown on page 99

SETTING MEASUREMENTS FOR SAFFORD-KEWANEE PORTABLE SMOKELESS BOILERS

										_				
Number of Boiler	301	302	303	304	305	306	307	308	309	310	311	312	313	314
Diameter of Boiler, inchesA Length of Boiler, feet and inchesB	36 7-5	36 7-9	36 8-6	42 7-9	42 8-6	42 9-4	48 8-9	48 10-1	48 11-1	54 10-7	54 11-7	54 12-7	60 12-7	60 13-7
Header to Bridge Wall, inches		32	655 38	6 32	6½ 38	8 44	73/2 38	9 44 43	9½ 50	9 50 49	10 56 55	11 62 61	10 56 55	11 62 61
Length of Grate, inchesE Height of Return, inches	31 18 73 72	31 18 73 72	37 18 73 72	31 19 78 77	37 19 78 77	19 78 77	37 19 84 83	19 84 83	19 84 83	19 90 89	19 90 89	19 90 89	19 100 98	19 100 98
Height of Boiler, inches	27	27	33	27	33	37	29	39	45		33	39	45	51
Width of Ash Pit, inches	25 51	25 55	25 58	31 55	31 58	31 64	37 61	37 67	37 73	43 84	43	43 96	49	96
Length of Foundation, inchesL Length of Smoke Box, inchesM Height of Pier, inchesN	11 17	11 17	11 17	12 16	12 16	12 16	14 17	14 17	14 17	15 20	15 20	15 20	17 20	17 20
Front Part of Boiler to Steam Supply, feet and inches	5-0 10 63	5-3 10 63	5-8 12 63	5-5 11 67	5-8 12 67	6-3 12 67	5-11 12 71	6-8 14 71	7-3 14 71	7-6 13 77	8-2 13 77	8-9 15 77	8–9 15 83	9-3 18 83
Width Breeching Connection, inchesS Length Breeching Connection, inchesT	8	8 18	8 18	8 22	8 22	8 22	8 28	8 28	8 28	8 36	8 36	8 36	10 42	10 42
Width of Foundation, inches		33 325 85	33 335 85	39 390 100	39 400 100	39 425 100	45 450 115	45 460 115	45 475 115	60 875 180	60 925 180	60 975 180	66 975 215	66 1025 215
Outside surface to be covered, square feet.	100	104	112	117	121	133	148	157	173	184	212	221 13	255 18	265 18
Note:—Thickness Bridge Wall, inchesF Bridge Wall to Rear Wall, inchesG	9	9	9	9	9	9	9	J	9	12	12	12	7	7

Note:—Boilers Nos. 310,311,312, 313 and 314 are constructed as shown on page 98 but are set on brick foundation instead of iron ash pit as shown on page 99.

For cost of covering with Mineral Wool Blocks, or Asbestos Sponge Felt, see page 257.



SETTING AND FOUNDATION PLAN-SAFFORD-KEWANEE PORTABLE SMOKELESS BOILERS

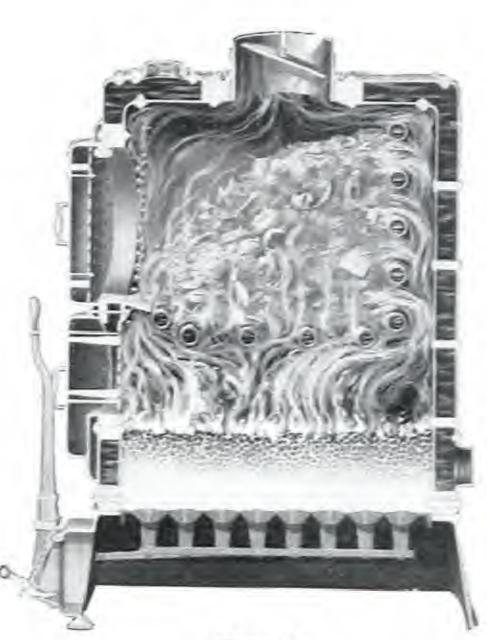
SAFFORD-KEWANEE FIREBOX AND SMOKELESS BOILERS

SETTING MEASUREMENTS SAFFORD-KEWANEE PORTABLE SMOKELESS BOILERS

Number of Boiler	315	316	317	318	310	320.	-321	322
Diameter Boiler, inches	60	15-11	66 15-6	66 17-6	72 10-3	72 17-7	78 17-0	78 18-0
Header to Bridge Wall, inches	12 63 61 13	12 69 67 13	13 63 61 13	13 69 67 13	14 69 67 13	14 70 73 13	15 75 73 11	15 75 73 10
Total Height, inches	101	101	107	107	113	113	115	115.
Rear Wall to Pier, inches	57 53 107	63 53 113	62 50 107	50 50 113	63 65 113	7.4 6.5 119	72 71 110	70 71 125
Length of Smoke Box, inches	17 23	17 23	18 23	18 23	20 23	20	20 10	20 10
From Front Boiler to Steam Supply, feet and inches	10-11 16	11-6 18	11-0 17	11-9	11-7	12 2	12-2	12-0
Height of Water Line, inches	86 10 42	86 10 42	90 10 18	00 10 48	06 12 58	96 12 58	07 12 62	07 12 62
Height of Steam Supply, inches	103 23 79	103 23 79	109 23 85	109 23 85	115 23 91	115 23 91	117 23 97	117 23 97
Number Common Brick	2100 250	2200 270	2200 320	2300 310	2450 320	2530 325	2675 360	2806 375
Outside surface to be covered, square feet	266	280	290	330	33.5	360	370	300

KEWANEE WATER-HEATING GARBAGE BURNERS







Type A

Type D

Type H

KEWANEE WATER-HEATING GARBAGE BURNERS

List Prices and Data

	Į.	-IST Prices	and Data					
Catalogue Number. Type. Cipher.	30 A	31 A	32 A	34 D	35 D	36 D	37 D	38 D
Capacity, gallons per hour, 50 degree raise Capacity, garbage chamber one charge, bushels.	200 1	Gaze 300 2	Gear 400	Gain 500 2	Gale 600	Gamy 800	Gang 1000	Gap 1200
Height over all, inches Dimensions of floor space required, inches. Height to bottom of front garbage door, inches. Dimensions of garbage door, inches. Dimensions of coal or fire doors, inches. Diameter of coal or lower grates, inches. Size flow and return flanges, two each, inches. Diameter of smoke pipe, inches. Approximate shipping weight, pounds	22 33 7x8 7x8 12 11/2	64 25 37 7x8 7x8 16 2 8	64 30 37 7x8 7x8 20 2 8	56 29x29 32 14x16 14x10 18x18 2 9	3 56 29x35 32 14x16 14x16 15x24 2	56 35x35 31 16x16 16x10 24x24 21-2	56 35x41 31 16x16 16x10 24x30 2 ¹ / ₂ 10	56 35x47 31 16x16 16x10 24x36 2 ¹ / ₂ 10
List price, complete with tools	\$96.00	\$126.00	1000 \$160.00	1600 \$214.00	1800 \$244.00	2100 \$274.00	2300 \$318.00	2500 \$350.00
Catalogue Number Type Cipher	4.245.282.48	D	40 D	41 H	42 H	43 H	44 H	45 H
Capacity gallons per hour, 50 degree raise.	*******	Garb 1500	Gash 1800	Gait 1200	Game 1500	Gasp 1500	Germ 2200	Gift 2600
Capacity, garbage chamber one charge, bushels. Height over all, inches. Dimensions of floor space required, inches. Height to bottom of front garbage door, inches. Dimensions of garbage door, inches. Dimensions of coal or fire doors, inches. Diameter of coal or lower grates, inches. Size, flow and return flanges, two each, inches. Diameter of smoke pipe, inches		56 41x53 31 16x16 16x10 30x42	12 56 41x59 31 16x16 16x10 30x48 3	6 69 38x36 37 16x16 16x8 24x24 3 10	8 69 38x42 37 16x16 16x8 24x30 3 10	9 69 38x48 37 16x16 16x8 24x36 4	11 71 38x54 37 16x16 16x8 24x42	12 71 38x60 37 10x16 16x8 24x48
Approximate shipping weight, pounds List price, complete with tools		3000 \$396.00	3300 \$440.00	2800 \$400.00	3100 \$450.00	3400 \$500.00	3700 \$550.00	4000 \$600.00

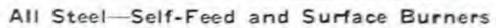
One full charge of garbage can be completely destroyed on an average in one hour.
We recommend that circulating mains and branches be covered in large installations.
Best results are obtained when capacity of water storage tank is 50 per cent. greater than hourly capacity of the garbage burner to which it attached.

TABASCO WATER-HEATERS











For Maximum Working Pressure of 60 Pounds

TABASCO WATER HEATERS

For Maximum Working Pressure of 60 Pounds

Price List and Dimensions

Heater	Cipher	Heating Capacity Gallons per Hour	Size of Heater Inches	Total Height Inches	Sizes Flows and Returns Inches	Weight Pounds	Price Magazine Feed	Price Surface Burner	Heater
17 18	Fabian	130	17x30	52 57	2-11/2	400	\$72.00	\$66.00	17
18	Fable Facade	150 200	17x36 21x30	52	$\begin{array}{c} 2-1\frac{1}{2} \\ 2-2 \end{array}$	420 520	76.00 90.00	70.00 80.00	18
21 22 25 26	Facial	250	21x36	59	$\tilde{2}$ - $\tilde{2}$	550	96.00	88.00	21 22 25 26 27
25	Factor	300	25x36	59	2-2	780	126_00	116.00	25
26	Faculty	350	25x42	65	2-2	810	132.00	122.00	26
27	Facund	400	25x48	71	2-2	840	142.00	130.00	27
30	Faddle	500	30x42	65	2-3	1100	160.00	144.00	30 31
31	Faggot	600	30x48	75	2-3	1150	168.00	156.00	31
27 30 31 32	Faint	700	30x54	81	2-3	1240	176.00	164.00	32

"EXTRA HEAVY" TABASCO HEATERS-TYPE R

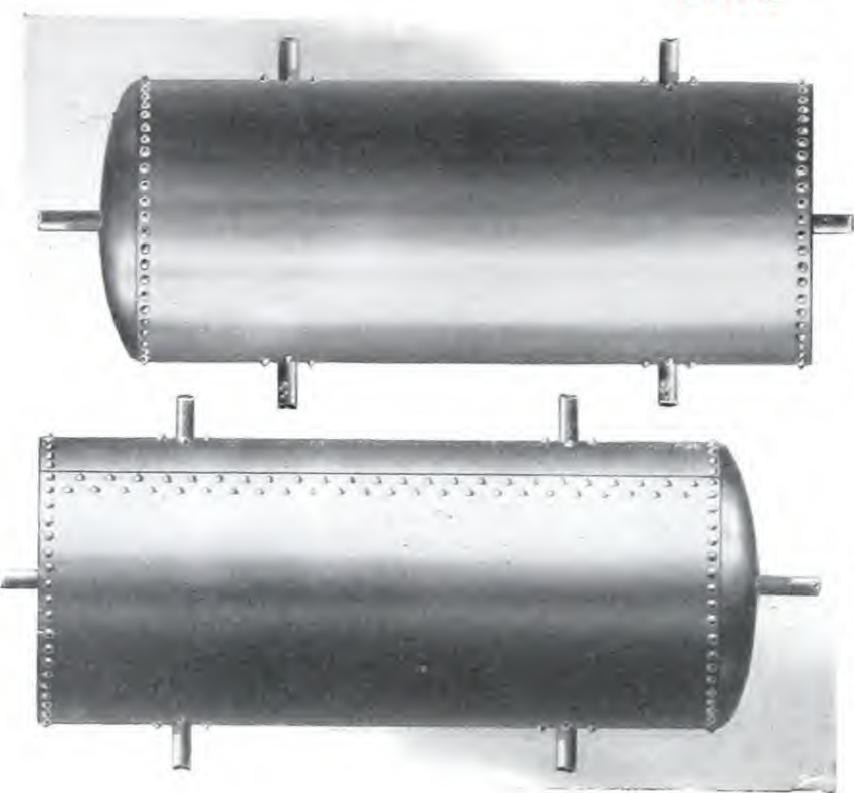
Good for a Working Pressure of 100 Pounds

150	Goss	150	12"	4' 10"	2-11/2"	600	\$106.00	********	150
200	Gode	200	16"	5' 3"	2-2"	700	128.00	******	200
300	Gore	300	20"	5' 4"	2-2''	950	158.00		300
400	Goad	400	20"	5' 10"	2-2"	1130	180.00		400
500	Golf	500	25''	6' 4"	2-3"	1500	210.00	*********	500
700	Gown	700	25"	7' 2"	2-3"	1650	230.00	Proposition Prop	700

Magazine Feed Heaters are always shipped unless Surface Burners are specified in order. Heaters are provided with brass clean-out plugs.

On all Tabasco Heaters the heating capacity is based on raising the water in the storage tank 50 degrees Fahrenheit in one hour.

TANKS



STANDARD TANKS

Tested to 100 pounds hydrostatic pressure, and for use where water working-pressure does not exceed 65 pounds. Regularly made with openings so that they may be used horizontally or vertically. Manholes, handholes, and coils furnished only when specially ordered. We recommend that tanks containing coils be made with a manhole.

EXTRA HEAVY TANKS

Tested to 150 pounds hydrostatic pressure, and for use where water working-pressure does not exceed 100 pounds. For tanks for greater pressure, prices and specifications will be submitted on application.

TANKS

STANDARD TANKS

List Prices and Data

EXTRA HEAVY TANKS

llons	Size	Approx. Shipping Weight	Open'gs	List Price		ze oil Ins.	Plain Coil	Galv. Coil	Capacity Gallons	Size	Thick- ness Shell Inches	Convex Head Inches	Concave Head Inches		Size Openings Inches	List Price
66	20x 4	225	11/2	\$ 43	4	1	\$18	\$22	120	24x 5	16	1/4	16	410	11/2	\$ 60
85	20x 5	260	11/2	45	4	1	19	24	140	24x 6		4,5		470	11/2	65
100	24x 4	280	11/2	47	4	11/4	22	26	180	30x 5		4.5	**	530	2	70
120	24x 5	325	11/2	50	4	114	23	28	220	30x 6	9.6	**	- "	600	2	78
140	24x 6	360	13/2	54	4	114	24	30	250	30x 7	941	3.0	14.	670	2	86
150	30x 4	425	2	56	4	114	22	26	295	30x 8	3.00	4.1	(4)	7.50	2	94
180	30x 5	490	2	60	4	114	23	28	315	36x 6	14	5 1 6	3/8	950	2	108
220	30x 6	555	2	66	4	114	24	30	365	36x 7	19	4.5	100	1060	2	118
250	30x 7	620	2	72	4	114	25	32	420	36x 8	55	4.74	96	1170	2	128
295	30x 8	685	2	78	4	114	26	34	525	36x10	3.0	71	-10-	1390	2	148
315	36x 6	740	2	82	4	13/2	32	39	430	42x 6	4.6	4.4	100	1140	2	126
365	36x 7	825	2	90	4	112	34	42	500	42x 7	35	91	480	1270	2	1.38
420	36x 8	910	2	98	4	135	36	44	575	42x 8	04-	96-	34-	1400	2	1.50
525	36x10	1080	2	112	4	11/2	40	49	720	42x10	100	7.1	1.0	1660	2	174
430	42x 6	890	2	106	4	11/2	32	39	865	42x12	40.	370	19	1940	2	198
500	42x 7	1985	2	114	4	11/2	34	42	1000	42x14	380	3.6	- ka	2200	. 2	222
500 575	42x 8	1080	2	124	4"	11/2	36	44	750	48x 8	-64	44	434	1600	3	178
720	42x10	1270	2	140	4	11/2	40	49	940	48x10	347	210	1.4	1900	3	204
865	42x12	1460	2	158	4	11/2	44	53	1130	48x12	1.41	- (1-	4.4	2200	3	230
000	42x14	1650	2	176	4	11/2	48	58	1300	48x14	34	12	198	2500	3	256
	1-41	2.00	-		100		****	100	1500	48x16	39	1.4	44	2800	3	282
									1700	48x18	111	1+	(a	3100	3	308

Flanged openings add to list for each opening: 2" or $2\frac{1}{2}$ "—\$5.00; 3" or $3\frac{1}{2}$ "—\$6.00; 4"—\$7.00. Manhole in head, \$20.00; in shell, \$30.00. Handhole in head or shell, \$6.00.

For Extras, Coils, etc., list same as used for Standard Tanks.

THE ECLIPSE HOT WATER SERVICE TANK AND CIRCULATOR



THE ECLIPSE HOT WATER SERVICE TANK

Designed especially for the City of Winnipeg and localities where the storage tank has to be frequently cleaned, and where it has been found advantageous to heat water for domestic purposes by steam.

Especially adapted for apartment blocks, hospitals, hotels, restaurants, and office buildings where large

quantities of hot water are continually being used.

Built of 1/4 inch steel plate with 1/5 and 3/8 inch heads, tested to 100 pounds water pressure. Diameter Length Capacity List Price Diameter Length Capacity List Price Inches Feet Gallons Black Iron Inches Feet Gallons Black Iron 30 220 \$160.00 36 420 \$215.00 30 250 170.00 230.00 500 30 295 180.00 250.00575 36 365 200.00 10

720 270.00Coil Head Openings:-Steam supply, 2 inches; Steam return, 114 inches. Tank Openings:-Two 2 inches on top, one 2 inch on bottom; one 1 inch on bottom for circulation. Regularly equipped with galvanized iron pipe coils, but can be furnished with brass or copper coils at a special price.

THE ECLIPSE HOT WATER CIRCULATOR

Designed for installations where a regular type Hot Water Storage Tank is used, and where it is desired to heat the water by steam. Connections between storage tank and circulator should be valved, to permit cleaning of circulator without emptying the water in the tank. Regularly equipped with galvanized iron coils but can be furnished with brass or copper coils at a special price.

Six foot coil (length over all 6 feet 91/2 inches), List price, \$70.00. Other sizes upon application.

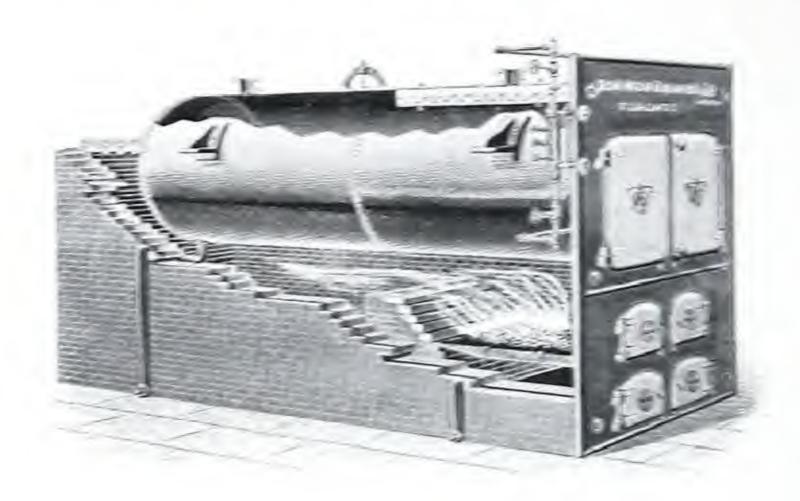
Coil Head Openings:-Steam supply, 2 inches; Steam return, 11/4 inches.

Circulator Openings:-Supply and return, each 21/2 inches.

Note: In specifying Eclipse Storage Tanks, it is recommended to figure a capacity in apartment housework of at least 15 gallons per suite. For capacity of steam boiler required to heat same, or for Tanks connected to Eclipse Circulators, figure one and a quarter square feet per gallon. For restaurants and extra heavy service, two square feet per gallon is advisable. Water line of steam boiler must be at least six inches below tank or circulator.

It is also recommended that the steam boiler, tank and circulator be covered with mineral wool, asbestos or some other satisfactory covering.

HORIZONTAL RETURN TUBULAR STATIONARY BOILERS



HORIZONTAL RETURN TUBULAR STATIONARY BOILERS

Standard Dimensions of Low Pressure Steam Heating Boilers

Diameter of Boiler, ins.	36	36	42	42	42	48	48	48	54	54	60	60	60	66	66	72	72
Length of Boilerft. No. of Tubes, 3 ins No. of Tubes, 3½ ins	10 32	12 32	10 38	12 38	14 38	10 44	12 44	14 44	12 56	14 56	12 70	14 70	16 54	14 92	16 	14 108	16 92
Total Heating Surface square feet	305 9 14 3/8 18 4 3	365 11 14 3/8 18 4 3	363 10.7 14 3/8 20 5 4	434 12.9 14 38 20 5 4	504 12.9 14 38 20 5 4	420 12 3 8 22 6 5	503 14.6 16 3/8 22 6 5	584 14.6 \$\frac{5}{16} 3/8 22 6 5	628 16.5 16.5 24 6 5	730 16.5 5 38 24 6 5	774 18.2 16 3/8 26 7 6	899 21 \$\frac{5}{16} 3\frac{3}{8} 26 7 6	937 23.9 \$\frac{1}{3}\frac{1}{6} 28 7 6	1156 22.9 3/8 16 30 8 7	1217 26.1 3/8 17/8 30 8 7	1344 24.7 3/8 7/6 34 8 7	1500 28 3/8 7 16 34 8 7
Total Height, feet-ins. List Price	3 6-1½ \$500	3 6-1½ \$550	3 7-1 \$600	3½ 7-1 8650	3½ 7-1 \$700	3 7-6 \$740	3½ 7-6 \$800	3½ 7-6 \$860	8-41/2			4 9-3 \$1180	$\begin{array}{c} 2-3 \\ 9-3 \\ \$1280 \end{array}$	2-3 10-2 \$1400	$\begin{array}{c} 2-3\frac{1}{2} \\ 10-2 \\ \$1520 \end{array}$	10-11	10-11
Fixtures, lbs Common Brick Fire Brick Horse Power at 15 to 1 Rating	4850 6500 600	5350 7000 650	5800 8000 700	6400 9000 700	7000 10000 700 34	7400 10500 800	8200 11000 800 34	9000 12000 800 39	10100 12500 900 42	11000 13000 900 49	12000 14000 950 52	13250 15500 950	14500 17000 950	16100 17500 1000	17500 18000 1000	18750 19000 1050	20500 19500 1050

Note:—Under Ontario Government Laws, all H.R.T. Boilers, 48" diameter and over, have a man-hole in the front head, as well as in the shell. It is because of this that the H.P. rating of 42" Boilers is much the same as the H.P. ratings of 48" Boilers.

All Boilers below 48" have man-hole in shell and hand-hole in each head.

H.R.T. Boilers used for heating purposes only, do not require to be suspended. H.R.T. Boilers used for heating purposes are only allowed to carry a working pressure of 15 pounds. The heating power of these Boilers, as expressed in square feet of direct radiation, is estimated at 100 sq. ft. for each H.P. Where Boilers are required to be equipped with shaking grates, add \$4.50 per square foot of grate (net).

Fixtures include full cast iron front and doors, grate bars, bearers, arch plate, dead plate, back arch bars, soot door and frame, steam gauge, water gauge, gauge cocks, spring loaded safety valve, feed valve, check valve, and asbestos packed stop cock, firing tools and automatic damper regulator.

Discounts quoted on application.

INFORMATION REQUIRED FOR ORDERING BOILERS AND BOILER REPAIRS

State plainly the catalogue, name, number and rated capacity of Boiler required; also number of square feet of Direct, and if any, Direct-Indirect or Hot Blast Radiation, that Boiler is to take care of.

When ordering repair parts for any of the Boilers listed in this catalogue, or for that matter for any other Boiler, first give the size, number and catalogue name, or name on front of the Boiler. Next give the factory or serial number. This is usually found on the little brass plate on one of the front doors. It is well to mention all letters or numbers in order in which they appear on part required. In case it is impossible to give any of the above requirements, send a sketch having dimensions marked on it, and a rough detailed description of part wanted. It will also be well to mention year number where same appears on front of Boiler, and if possible, the year in which the Boiler was installed, or better still, the date and number of the invoice pertaining to it. Especially mention whether the boiler is Round or Square. Where Round, if it is a grate bar that is required, mention which one, numbering from the front, and whether it has a lug or hook on it. If it is a section that is required, mention which one numbering from the Fire-pot. If it is a door or door-frame, especially mention which one.

Where section is required for a Sectional Boiler, mention which one, numbering from the front and whether same has any tapped openings, and the size of the tapping, and whether the tapping is required or not. Where it is a grate bar, mention which one numbering from the front, and whether it shakes on the left-hand side or the right-hand side.

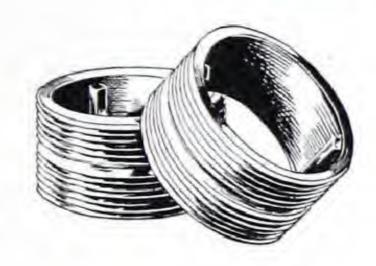
Where a Boiler has no serial number on the little brass plate, please mention the fact that it has no serial number.

When ordering repairs for a Boiler, send order direct to the Office or Branch from which Boiler was purchased.

With these particulars we will be able to ship repairs promptly.

Give full shipping instructions.

STEAM AND WATER



ALL SAFFORD radiator sections are connected together with heavy malleable iron right and left nipples.

MANUFACTURED BY

THE



St. John

Montreal

Hamilton

TORONTO

Winnipeg Calgary

Vancouver



SAXON

ONE-COLUMN PLAIN



STEAM

SAXON ONE-COLUMN PLAIN RADIATORS

FOR STEAM OR WATER

CAPACITIES AND DIMENSIONS

					HEATIN	G SURFAC	EE				
No.	Length	38" in	Height	32" in	Height	26" in	Height	23" in	Height	20" in	Height
of Sections	2½" per Section	3 Sq. Ft. per Section	Equivalent 1-in. Pipe	2½ Sq. Ft. per Section	Equivalent 1-in. Pipe	Sq. Ft. per Section	Equivalent 1-in Pipe	134 Sq. Ft. per Section	Equivalent 1-in. Pipe	11/2 Sq. Ft. per Section	Equivalen 1-in. Pipe
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	5 7½ 10 12½ 15 17½ 20 22½ 25 27½ 30 32½ 35 37½ 40 42½ 45 47½ 50 52½ 55 57½ 60	6 9 12 15 18 21 24 27 30 33 36 39 42 45 48 51 57 60 63 66 69 72	18 27 36 45 54 63 72 81 90 99 108 117 126 135 144 153 162 171 180 189 198 207 216	$\begin{array}{c} 5\\ 7 \downarrow_2\\ 10\\ 12 \downarrow_2\\ 15\\ 17 \downarrow_2\\ 20\\ 22 \downarrow_2\\ 25\\ 27 \downarrow_2\\ 30\\ 32 \downarrow_2\\ 35\\ 37 \downarrow_2\\ 40\\ 42 \downarrow_2\\ 45\\ 47 \downarrow_2\\ 50\\ 52 \downarrow_2\\ 55\\ 57 \downarrow_2\\ 60\\ \end{array}$	15 $22 \cdot 12$ 30 $37 \cdot 12$ 45 $52 \cdot 12$ 60 $67 \cdot 12$ 75 $82 \cdot 12$ 90 $97 \cdot 12$ 105 $112 \cdot 12$ 120 $127 \cdot 12$ 135 $142 \cdot 12$ 150 $157 \cdot 12$ 165 $172 \cdot 12$ 180	4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48	12 18 24 30 36 42 48 54 60 66 72 78 84 90 96 102 108 114 120 126 132 138 144	3 1 a 5 6 2 a 8 1 a 10 11 2 a 13 2 a 1 5 16 2 a 1 8 2 a 2 a 2 a 2 a 2 a 2 a 2 a 2 a 2 a 2	10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120	3 4 1/2 6 7 1/2 9 10 3/2 12 13 1/2 15 16 1/2 18 19 1/2 21 22 1/2 24 25 1/2 27 28 1/2 30 31 1/2 33 34 1/2 36	9 13½ 18 22½ 27 31½ 36 40½ 45 49½ 54 58½ 67½ 76½ 76½ 85½ 90 94½ 90 94½ 103½ 108

^{*}In estimating length of radiator allow ½ inch for each plug or bushing.
Width of section 4½ inches, width of legs 5¼ inches. Additional measurements on pages 202 and 203. Made in single connection only Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.



SAXON

TWO-COLUMN PLAIN



STEAM

SAXON TWO-COLUMN PLAIN RADIATORS

FOR STEAM OR WATER

CAPACITIES AND DIMENSIONS

	*						HEATI	NG SUR	FACE						
No.	Length		Height		Height	32" in	Height	30" in	Height	26" in	Height	23" in	Height	20" in	Height
of Sections	2½ in. per Section	5 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	3 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	5 7½ 10 12½ 15 17½ 20 22½ 25 27½ 30 32½ 35 37½ 40 42½ 45 47½	10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95	30 45 60 75 90 105 120 135 150 165 180 195 210 225 240 255 270 285	8 12 16 20 24 28 32 36 40 44 48 52 56 60 64 68 72 76	24 36 48 60 72 84 96 108 120 132 144 156 168 180 192 204 216 228	62/3 10 131/3 162/3 20 231/3 262/3 30 331/3 362/3 40 431/3 462/3 50 531/3 562/3 60 631/3	20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180	6 9 12 15 18 21 24 27 30 33 36 39 42 45 48 51 54	18 27 36 45 54 63 72 81 90 99 108 117 126 135 144 153 162 171	51/3 8 102/3 131/3 16 182/3 211/3 24 262/3 291/3 32 343/3 40 422/3 451/3 48 502/3	16 24 32 40 48 56 64 72 80 88 96 104 112 120 128 136 144 152	4 ² / ₃ 7 9 ¹ / ₃ 11 ² / ₃ 14 16 ¹ / ₃ 18 ² / ₃ 21 23 ¹ / ₃ 25 ² / ₃ 28 30 ¹ / ₃ 32 ² / ₃ 35 37 ¹ / ₃ 39 ² / ₃ 42 44 ¹ / ₃	14 21 28 35 42 49 56 63 70 77 84 91 98 105 112 119 126 133	4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38	12 18 24 30 36 42 48 54 60 66 72 78 84 90 96 102 108 114
20 21	50 521 ₂	100 105	300 315	80 84	240 252	66 ² / ₃	200 210	60	180 189	53½ 56	160 168	4633 49	140 147	40 42	120 126
22 23	55 57½	110 115	330 345	88 92	264 276	731/3 762/3	220 230	66 69	198 207	5823 6113	176 184	511/3 532/3	154 161	44 46	132 138
24 25	60 6212	· 120 125	360 375	96 100	288 300	80 831/3	240	72 75	216 225	64 66%	192 200	56 581/3	168 175	48 50	144 150

*In estimating length of radiator allow ½ inch for each plug or bushing.
Width of section 7% inches, width of legs 8¼ inches. Additional measurements on pages 202 and 203. Made in twin and single connections. Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.



SAXON
THREE-COLUMN
PLAIN



STEAM

SAXON THREE-COLUMN PLAIN RADIATORS

FOR STEAM OR WATER

CAPACITIES AND DIMENSIONS

						HEATIN	G SURFA		011123 7	AND DIM	ENSIONS		
No.	* Length	44" in	Height	38" in	Height		Height		Height	22" in	Height	187 in	Height
of Sections	2½ in. per Section	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	334 Sq. Ft: per Section	Equiva- ient 1 in Pipe	Sq. Ft.	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	$ \begin{array}{c} 5 \\ 7 \\ 10 \\ 12 \\ 2 \\ 15 \\ 17 \\ 20 \\ 22 \\ 25 \\ 27 \\ 20 \\ 22 \\ 25 \\ 27 \\ 20 \\ 22 \\ 25 \\ 27 \\ 20 \\ 24 \\ 25 \\ 40 \\ 42 \\ 42 \\ 45 \\ 47 \\ 25 \\ 57 \\ 26 \\ 57 \\ 26 \\ 62 \\ 62$	12 18 24 30 36 42 48 54 60 66 72 78 84 90 96 102 108 114 120 126 132 138 144 150	36 54 72 90 108 126 144 162 180 198 216 234 252 270 288 306 324 342 360 378 396 414 432 450	10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120 125	30 4 60 75 90 105 120 135 150 165 180 195 210 225 240 255 270 285 300 315 330 345 360 375	$\begin{array}{c} 9\\ 13 \frac{1}{2}\\ 18\\ 22 \frac{1}{2}\\ 27\\ 31 \frac{1}{2}\\ 36\\ 40 \frac{1}{2}\\ 45\\ 49 \frac{1}{2}\\ 54\\ 58 \frac{1}{2}\\ 63\\ 67 \frac{1}{2}\\ 76 \frac{1}{2}\\ 76 \frac{1}{2}\\ 81\\ 85 \frac{1}{2}\\ 90\\ 94 \frac{1}{2}\\ 99\\ 103 \frac{1}{2}\\ 108\\ 112 \frac{1}{2}\\ \end{array}$	27 4044 54 6744 81 9444 108 12144 135 14844 162 17544 189 20244 216 22944 243 25644 270 28344 270 28344 33744	713 1114 15 1834 2214 30 3334 415 45 45 45 45 45 60 6334 6714 7834 8214 8614 90 9334	221 ₂ 331 ₄ 45 561 ₄ 671 ₉ 783 ₄ 90 1011 ₄ 1123 ₇ 135 1461 ₄ 1571 ₄ 1581 ₄ 2021 ₄ 2131 ₄ 225 2361 ₄ 2471 ₉ 258 ₁ 270 2811 ₄	8 9 12 15 18 21 27 33 36 39 12 15 18 15 16 63 66 69 75	18 27 36 45 54 63 72 81 90 108 117 126 135 144 153 162 171 180 189 198 207 216 225	114 114 115 115 120 121 121 121 121 121 121 121	1314 2014 27 3334 4034 4734 60014 54 60114 81 81 81 81 81 81 81 81 81 81 81 81 81

*In estimating length of radiator allow 1/2 inch for each plug or bushing.

Width of section 9 inches, width of legs 91/4 inches. Additional measurements on pages 202 and 203. Made in twin and single connections. Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

SAXON

FOUR-COLUMN PLAIN



FOR . STEAM OR WATER

SAXON FOUR-COLUMN PLAIN RADIATORS FOR STEAM OR WATER CAPACITIES AND DIMENSIONS

	*						HEATI	NG SUR	FACE						
No.	Length 3 in.	45" in	Height	38" in	Height	32" in	Height	26" in	Height	22" in	Height	20" in	Height	18" in	Height
of Sections	per	Sq. Ft. per Section	1 in.	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	6½ Sq. Ft. per Section	Equiva- lent 1 in. Pipe	5 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	3½ Sq. Ft. per Section	Equiva- lent 1 in. Pipe	3 Sq. Ft. per Section	Equiva- lent 1 in. Pipe
2 3 4 5 6 7 8 9 10 11 12 13 14 15	6 9 12 15 18 21 24 27 30 33 36 39 42 45	20 30 40 50 60 70 80 90 100 110 120 130 140	60 90 120 150 180 210 240 270 300 330 360 390 420 450	16 24 32 40 48 56 64 72 80 88 96 104 112 120	48 72 96 120 144 168 192 216 240 264 288 312 336 360	13 19½ 26 32½ 39 45½ 52 58½ 65 71½ 78 84½ 91	39 $58\frac{1}{2}$ 78 $97\frac{1}{2}$ 117 $136\frac{1}{2}$ 156 $175\frac{1}{2}$ 195 $214\frac{1}{2}$ 234 $253\frac{1}{2}$ 273 $292\frac{1}{2}$	10 15 20 25 30 35 40 45 50 55 60 65 70 75	30 45 60 75 90 105 120 135 150 165 180 195 210 225	8 12 16 20 24 28 32 36 40 44 48 52 56 60	24 36 48 60 72 84 96 108 120 132 144 156 168 180	7 10½ 14 17½ 21 24½ 28 31½ 35 38½ 42 49 52½	21 $31\frac{1}{2}$ 42 $52\frac{1}{2}$ 63 $73\frac{1}{2}$ 84 $94\frac{1}{2}$ 105 $115\frac{1}{2}$ 126 $136\frac{1}{2}$ 147 $157\frac{1}{2}$	6 9 12 15 18 21 24 27 30 33 36 39 42 45	18 27 36 45 54 63 72 81 90 99 108 117 126 135
16 17 18 19 20 21 22 23 24	48 51 54 57 60 63 66 69 72	160 170 180 190 200 210 220 230 240	480 510 540 570 600 630 660 690 720	128 136 144 152 160 168 176 184 192	384 408 432 456 480 504 528 552 576	104 $110\frac{1}{2}$ 117 $123\frac{1}{2}$ 130 $136\frac{1}{2}$ 143 $149\frac{1}{2}$ 156	$ \begin{array}{r} 312 \\ 33112 \\ 351 \\ 37012 \\ 390 \\ 40912 \\ 429 \\ 44812 \\ 468 \end{array} $	80 85 90 95 100 105 110 115 120	240 255 270 285 300 315 330 345 360	64 68 72 76 80 84 88 92	192 204 216 228 240 252 264 276 288	56 59½ 63 66½ 70 73½ 77 80½ 84	168 $178\frac{1}{2}$ 189 $199\frac{1}{2}$ 210 $220\frac{1}{2}$ 231 $241\frac{1}{2}$ 252	48 51 54 57 60 63 66 69 72	144 153 162 171 180 189 198 207 216

*In estimating length of radiator allow ½ inch for each plug or bushing.
Width of section 3 inches, width of legs 11¾ inches. Additional measurements on pages 202 and 203.
Made in twin and single connections. Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

VICTORIA

ONE-COLUMN ORNAMENTAL



FOR STEAM OR WATER

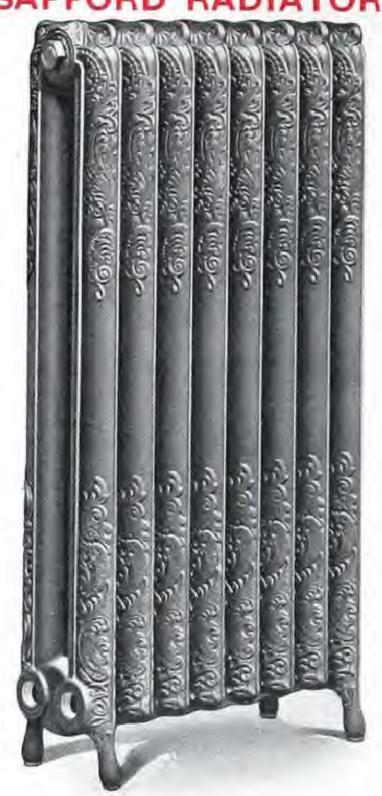
VICTORIA ONE-COLUMN ORNAMENTAL RADIATORS FOR STEAM OR WATER CAPACITIES AND DIMENSIONS

	20				HEATIN	G SURFAC	Œ				
No.	Length	38" in	Height	32" in	Height	26" in	Height	23" in	Height	20" in	Height
of Sections	2½" per Section	3 Sq. Ft. per Section	Equivalent 1-in. Pipe	2½ Sq. Ft. per Section	Equivalent 1-in. Pipe	Sq. Ft. per Section	Equivalent 1-in Pipe	123 Sq. Ft. per Section	Equivalent 1-in. Pipe	Sq. Ft. per Section	Equivalent L-in. Pipe
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	5 7 1/2 10 12 1/2 15 17 1/2 20 22 1/2 25 27 1/2 30 32 1/2 35 37 1/2 40 42 1/2 45 47 1/2 50 52 1/2 50 52 1/2 50 52 1/2 50 52 1/2 50 50 50 50 50 50 50 50 50 50 50 50 50	6 9 12 15 18 21 24 27 30 33 36 39 42 45 48 51 54 57 60 63 66 69 72 75	18 27 36 45 54 63 72 81 90 99 108 117 126 135 144 153 162 171 180 189 198 207 216 225	$\begin{array}{c} 5\\ 7\frac{1}{2}\\ 10\\ 12\frac{1}{2}\\ 15\\ 17\frac{1}{2}\\ 20\\ 22\frac{1}{2}\\ 25\\ 27\frac{1}{2}\\ 30\\ 32\frac{1}{2}\\ 35\\ 37\frac{1}{2}\\ 40\\ 42\frac{1}{2}\\ 45\\ 47\frac{1}{2}\\ 50\\ 52\frac{1}{2}\\ 55\\ 57\frac{1}{2}\\ 60\\ 62\frac{1}{2}\\ \end{array}$	15 22½ 30 37½ 45 52½ 60 67½ 75 82½ 90 97½ 105 112½ 120 127½ 135 142½ 150 157½ 165 172½ 180 187½	4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50	12 18 24 30 36 42 48 54 60 66 72 78 84 90 96 102 108 114 120 126 132 138 144 150	3!3 5 633 $8!3$ 10 1123 $13!3$ 15 1623 15 1623 $23!3$ 25 2623 $23!3$ 25 2623 $23!3$ 35 3623 353 35 3633 35 3633 40 4123	10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120 125	3 43_2 6 73_2 9 103_4 12 13_{-2} 15_{-1} 163_2 18 193_2 21 223_2 21 233_2 333_3 343_2 36 373_2	9 13½ 18 22½ 27 31½ 36 40½ 45 40½ 45 51 58 57 76 72 76 81 85 90 94 99 103 108 108 112½

^{*}In estimating length of radiator allow ½ inch for each plug or bushing.
Width of section 4½ inches, width of legs 5¼ inches. Additional measurements on pages 202 and 203. Made in single connection only.
Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

VICTORIA

TWO-COLUMN ORNAMENTAL



FOR STEAM OR WATER

VICTORIA TWO-COLUMN ORNAMENTAL RADIATORS FOR STEAM OR WATER CAPACITIES AND DIMENSIONS

	*		7				HEATI	NG SUR	FACE						
No.	Length	45" in	Height	38" in	Height	32" in	Height	30" in	Height	26" in	Height	23" in	Height	20" in	Height
of Sections	2½ in. per Section	5 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	3½ Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe
2	5	10	30	8	24	6 ² / ₃ 10 13 ¹ / ₃ 16 ² / ₃ 20 23 ¹ / ₃ 26 ² / ₃ 30 33 ¹ / ₃ 36 ² / ₃ 40 43 ¹ / ₃ 46 ² / ₃ 50 53 ¹ / ₃ 56 ² / ₃	20	6	18	5 1/3	16	423	14	4	12
3	7½	15	45	12	36		30	9	27	8	24	7	21	6	18
4	10	20	60	16	48		40	12	36	10 2/3	32	913	28	8	24
5	12½	25	75	20	60		50	15	45	13 1/3	40	1123	35	10	30
6	15	30	90	24	72		60	18	54	16	48	14	42	12	36
7	17½	35	105	28	84		70	21	63	18 2/3	56	1613	49	14	42
8	20	40	120	32	96		80	24	72	21 1/3	64	1823	56	16	48
9	22½	45	135	36	108		90	27	81	24	72	21	63	18	54
10	25	50	150	40	120		100	30	90	26 2/3	80	2313	70	20	60
11	27½	55	165	44	132		110	33	99	29 1/3	88	2523	77	22	66
12	30	60	180	48	144		120	36	108	32	96	28	84	24	72
13	32½	65	195	52	156		130	39	117	34 2/3	104	3013	91	26	78
14	35	70	210	56	168		140	42	126	37 1/3	112	3223	98	28	84
15	37½	75	225	60	180		150	45	135	40	120	35	105	30	90
16	40	80	240	64	192		160	48	144	42 2/3	128	3713	112	32	96
17	42½	85	255	68	204		170	51	153	45 1/3	136	3923	119	34	102
18	45	90	270	72	216	60	180	54	162	48	144	42	126	36	108
19	47½	95	285	76	228	63 ½	190	57	171	50 2/3	152	441/3	133	38	114
20	50	100	300	80	240	66 ¾	200	60	180	53 1/3	160	462/3	140	40	120
21	52½	105	315	84	252	70	210	63	189	56	168	49	147	42	126
22	55	110	330	88	264	731/3	220	66	198	58%	176	511/3	154	44	132
23	57½	115	345	92	276	762/3	230	69	207	61%	184	532/3	161	46	138
24	60 621/2	120	360	96	288	80	240	72	216	64	192	56	168	48	144
25		125	375	100	300	83 1/3	250	75	225	66.23	200	581/3	175	50	150

^{*}In estimating length of radiator allow ½ inch for each plug or bushing.
Width of section 7% inches, width of legs 8¼ inches. Additional measurements on pages 202 and 203. Made in twin and single connections.
Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

VICTORIA

THREE-COLUMN ORNAMENTAL



FOR STEAM OR WATER

VICTORIA THREE-COLUMN ORNAMENTAL RADIATORS

FOR STEAM OR WATER

CAPACITIES AND DIMENSIONS

No. of Sections	* Length 2½ in. per Section		HEATING SURFACE												
		44" in Height		38" in Height		32" in Height		26" in Height		22" in Height		18" in Height			
		6 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	5 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	3% Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in, Pipe		
2 3 4 5 6	$\begin{array}{c} 5 \\ 7 \\ 10 \\ 12 \\ 15 \end{array}$	12 18 24 30 36	36 54 72 90 108	10 15 20 25 30	30 45 60 75 90	9 13 ½ 18 22 ½ 27	27 40½ 54 67½ 81	7 ½ 11 ¼ 15 18 ¼ 22 ½	221_{2} 333_{4} 45 561_{4} 671_{2}	6 9 12 15 18	18 27 36 45 54	$\begin{array}{c} 4 \stackrel{\leftarrow}{\downarrow}_2 \\ 6 \stackrel{\circ}{\downarrow}_4 \\ 9 \\ 11 \stackrel{\leftarrow}{\downarrow}_4 \\ 13 \stackrel{\leftarrow}{\downarrow}_2 \end{array}$	$\begin{array}{c} 13\frac{12}{2} \\ 20\frac{14}{4} \\ 27 \\ 33\frac{3}{4} \\ 40\frac{12}{2} \end{array}$		
7 8 9	$\begin{array}{c} 17\frac{1}{2} \\ 20 \\ 22\frac{1}{2} \end{array}$	42 48 54	$126 \\ 144 \\ 162$	35 40 45	105 120 135	3135 36 4035	$\frac{941_2}{108}$ 1211_2	2614 30 3334	7834 90 10134	21 24 27	63 72 81	1534 18 2014	4734 54 6034		
10 11 12 13	25 27 12 30 32 12	60 66 72 78	180 198 216 234	50 55 60 65	150 165 180 195	15 49 1/2 54 58 1/2	135 148^{1}_{2} 162 1751_{2}	3712 4114 45 484	112½ 123¾ 135 146¼	30 33 36 30	90 99 108 117	2212 2131 27 2914	6734 7434 81 8734		
14 15 16	35 37 ½ 40	84 90 96	252 270 288	70 75 80	210 225 240	63 67 ½ 72	189 202½ 216	52 ½ 56 ¼ 60	157 ½ 168 ¼ 180	42 45 48	120 135 144	$\frac{31}{33}\frac{12}{4}$ $\frac{33}{36}$	94 ½ 101 ¼ 108		
17 18 19	4212 45 4712	102 108 114	306 324 342	85 90 95	255 270 285	761/2 81 851/2	229 1 ₂ 243 256 1 ₂	6334 6712 7114	$\begin{array}{c} 1911_{4} \\ 2021_{2} \\ 2133_{4} \end{array}$	51 54 57	153 162 171	3814 4015 4234	11434 12134 12834		
20 21 22 23	50 5232 55 5732	120 126 132 138	360 378 396 414	100 105 110 115	300 315 330 345	$90 \\ 941_{2} \\ 99 \\ 1031_{2}$	270 283½ 297 310½	75 7834 8212 864	22.5 23.634 24.732 25.834	60 63 66 69	180 189 198 207	45 47 ¼ 49 ½ 51 ¾	135 14134 14834 15534		
24 25	60 62½	144 150	432 + 450	120 125	360 375	$\frac{108}{112^{1}_{2}}$	324 3371 ₂	90 9334	270 28114	72 75	216 225	54 56 ¹ 4	162 16834		

*In estimating length of radiator allow 1/2 inch for each plug or bushing.

Width of section 9 inches, width of legs 91/4 inches. Additional measurements on pages 202 and 203. Made in twin and single connections. Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

VICTORIA

FOUR-COLUMN TWO-COLUMN

ORNAMENTAL



FOR STEAM OR WATER

VICTORIA FOUR-COLUMN ORNAMENTAL RADIATORS FOR STEAM OR WATER CAPACITIES AND DIMENSIONS

No. of Sections	*		HEATING SURFACE													
	Length 3 in.	45" in	45" in Height		38" in Height 32" in		n Height 26'		Height	22" in Height		20" in Height		18" in Height		
		Sq. Ft. per Section	1 in.	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	6½ Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	3½ Sq. Ft. per Section	Equiva- lent 1 in. Pipe		Equiva- lent 1 in. Pipe	
2 3 4 5 6 7 8 9 10 11 12 13 14	6 9 12 15 18 21 24 27 30 33 36 39 42 45	20 30 40 50 60 70 80 90 100 110 120 130 140 150	60 90 120 150 180 210 240 270 300 330 360 390 420 450	16 24 32 40 48 56 64 72 80 88 96 104 112 120	48 72 96 120 144 168 192 216 240 264 288 312 336 360	13 1912 26 3212 39 4512 52 5812 65 7112 78 8412 91 9712	39 58½ 78 97½ 117 136½ 156 175½ 195 214½ 234 253½ 273 292½	10 15 20 25 30 35 40 45 50 55 60 65 70 75	30 45 60 75 90 105 120 135 150 165 180 195 210 225	8 12 16 20 24 28 32 36 40 44 48 52 56 60	24 36 48 60 72 84 96 108 120 132 144 156 168	7 $10\frac{1}{2}$ 14 $17\frac{1}{2}$ 21 $24\frac{1}{2}$ 28 $31\frac{1}{2}$ 35 $38\frac{1}{2}$ 42 $45\frac{1}{2}$ 49	21 $31\frac{1}{2}$ 42 $52\frac{1}{2}$ 63 $73\frac{1}{2}$ 84 $94\frac{1}{2}$ 105 $115\frac{1}{2}$ 126 $136\frac{1}{2}$ 147	6 9 12 15 18 21 24 27 30 33 36 39 42	18 27 36 45 54 63 72 81 90 99 108 117 126	
16 17 18 19 20 21 22 23 24 25	48 51 54 57 60 63 66 69 72 75	160 170 180 190 200 210 220 230 240 250	480 510 540 570 600 630 660 690 720 750	128 136 144 152 160 168 176 184 192 200	384 408 432 456 480 504 528 552 576 600	104 $110\frac{1}{2}$ 117 $123\frac{1}{2}$ 130 $136\frac{1}{2}$ 143 $149\frac{1}{2}$ 156 $162\frac{1}{2}$	312 331½ 351 370½ 390 409½ 429 448½ 468 487½	80 85 90 95 100 105 110 115 120 125	240 255 270 285 300 315 330 345 360 375	64 68 72 76 80 84 88 92 96 100	180 192 204 216 228 240 252 264 276 288 300	52½ 56 59½ 63 66½ 70 73½ 77 80½ 84 87½	$157\frac{1}{2}$ 168 $178\frac{1}{2}$ 189 $199\frac{1}{2}$ 210 $220\frac{1}{2}$ 231 $241\frac{1}{2}$ 252 $262\frac{1}{2}$	45 48 51 54 57 60 63 66 69 72 75	135 144 153 162 171 180 189 198 207 216 225	

* In estimating length of radiator allow ½ inch for each plug or bushing.
Width of section 3 inches, width of legs 11¾ inches. Additional measurements on pages 202 and 203.
Made in twin and single connections. Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

REGINA
ONE-COLUMN
PLAIN



FOR STEAM OR WATER

REGINA ONE-COLUMN PLAIN RADIATORS

FOR STEAM OR WATER

CAPACITIES AND DIMENSIONS

No.											
	* Length	38" in	Height	32" in	Height	26" in	Height	23" in	Height	20" in Height	
of Sections	2½" per Section	3 Sq. Ft. per Section	Equivalent 1-in. Pipe	2½ Sq. Ft. per Section	Equivalent 1-in. Pipe	2 Sq. Ft. per Section	Equivalent 1-in Pipe	13/3 Sq. Ft. per Section	Equivalent 1-in. Pipe	1½ Sq. Ft. per Section	Equivalen 1-in- Pipe
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	5 71/2 10 121/2 15 171/2 20 221/2 25 271/2 30 321/2 35 371/2 40 421/2 45 471/2 50 521/2 55 571/2 60 621/2	6 9 12 15 18 21 24 27 30 33 36 39 42 45 48 51 54 57 60 63 66 69 72 75	18 27 36 45 54 63 72 81 90 99 108 117 126 135 144 153 162 171 180 189 198 207 216 225	5 7½ 10 12½ 15 17½ 20 22½ 25 27½ 30 32½ 35 37½ 40 42½ 45 47½ 50 52½ 55 57½ 60 62½	15 $22\frac{1}{2}$ 30 $37\frac{1}{2}$ 45 $52\frac{1}{2}$ 60 $67\frac{1}{2}$ 75 $82\frac{1}{2}$ 90 $97\frac{1}{2}$ 105 $112\frac{1}{2}$ 120 $127\frac{1}{2}$ 135 $142\frac{1}{2}$ 150 $157\frac{1}{2}$ 165 $172\frac{1}{2}$ 180 $187\frac{1}{2}$	4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50	12 18 24 30 36 42 48 54 60 66 72 78 84 90 96 102 108 114 120 126 132 138 144 150	3 5 5 6 7 3 8 3 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3	10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 115 110 115 120 125	3 $4 \frac{1}{2}$ 6 $7 \frac{1}{2}$ 9 $10 \frac{1}{2}$ $13 \frac{1}{2}$ 15 $16 \frac{1}{2}$ 18 $19 \frac{1}{2}$ 21 $22 \frac{1}{2}$ 24 $25 \frac{1}{2}$ 27 $28 \frac{1}{2}$ 30 $31 \frac{1}{2}$ 33 $34 \frac{1}{2}$ 36 $37 \frac{1}{2}$	9 $13\frac{1}{2}$ 18 $22\frac{1}{2}$ 27 $31\frac{1}{2}$ 36 $40\frac{1}{2}$ 45 $49\frac{1}{2}$ 54 $58\frac{1}{2}$ 63 $67\frac{1}{2}$ 72 $76\frac{1}{2}$ 72 $76\frac{1}{2}$ 90 $94\frac{1}{2}$ 99 $103\frac{1}{2}$ 108 $112\frac{1}{2}$

^{*} In estimating length of radiator allow ½ inch for each plug or bushing.
Width of section 4½ inches, width of legs 5¼ inches. Additional measurements on pages 202 and 203. Made in single connection only.
Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

REGINA TWO-COLUMN PLAIN



FOR STEAM OR WATER

REGINA TWO-COLUMN PLAIN RADIATORS

FOR STEAM OR WATER

CAPACITIES AND DIMENSIONS

	*		HEATING SURFACE													
No.	Length	45" in	Height	38" in		32" in	Height	30" in	Height	26" in	Height	23" in	Height	20" in	Height	
of Section	2½ in. per Section	5 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	$ \begin{array}{c} 5 \\ 712 \\ 10 \\ 1212 \\ 15 \\ 1712 \\ 20 \\ 2212 \\ 25 \\ 2712 \\ 30 \\ 3212 \\ 35 \\ 3712 \\ 40 \\ 4212 \\ \end{array} $	10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85	30 45 60 75 90 105 120 135 150 165 180 195 210 225 240 255	8 12 16 20 24 28 32 36 40 44 48 52 56 60 64 68	24 36 48 60 72 84 96 108 120 132 144 156 168 180 192 204	633 10 1313 1623 20 2313 2623 30 3313 3623 40 4313 4633 50 5313 5623	20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170	6 9 12 15 18 21 24 27 30 33 36 39 42 45 48 51	18 27 36 45 54 63 72 81 90 99 108 117 126 135 144 153	51/3 8 103/3 131/3 16 183/3 211/3 24 263/4 291/3 32 343/3 371/3 40 423/3 451/3	16 24 32 40 48 56 64 72 80 88 96 104 112 120 128 136	4^{2}_{3} 7 9^{1}_{3} 11^{2}_{4} 14 16^{1}_{3} 18^{2}_{3} 21 23^{1}_{3} 25^{2}_{3} 28 30^{1}_{3} 32^{2}_{3} 35 37^{1}_{3} 39^{2}_{3}	14 21 28 35 42 49 56 63 70 77 84 98 105 112 119	4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34	12 18 24 30 36 42 48 54 60 66 72 78 84 90 96 102	
18 19 20	45 471 ₂ 50	90 95 100	270 285 300	72 76 80	216 228 240	60 631/3 662/3	180 190 200	54 57 60	162 171 180	48 50 ² 3 53 ¹ 3	144 152 160	42 44 53 46 23	126 133 140	36 38 40	108 114 120	
21 22 23 24 25	521 <u>9</u> 55 57 <u>1</u> 9 60 62 <u>1</u> 9	105 110 115 120 125	315 330 345 360 375	84 88 92 96	252 264 276 288 300	70 7313 7623 80 8314	210 220 230 240 250	63 66 69 72 75	189 198 207 216 225	56 5843 6143 64 6625	168 176 184 192 200	49 5116 5323 56 5816	147 154 161 168 175	42 44 46 48 50	126 132 138 144 150	

^{*}In estimating length of radiator allow ½ inch for each plug or bushing.

Width of section 7% inches, width of legs 8¼ inches. Additional measurements on pages 202 and 203. Made in twin and single connections. Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

REGINA

THREE-COLUMN PLAIN



FOR STEAM OR WATER

REGINA THREE-COLUMN PLAIN RADIATORS

FOR STEAM OR WATER

CAPACITIES AND DIMENSIONS

No. of Sections	Length 21g in per Section		HEATING SUBJECT													
		44" in Height		38" in Height		32" in Height		20" in Height		22° or Holghe		14" in Height				
		5q. Fr. per Section	Equiva- tent 1 in. Pipe	Sq. Ft. per Section	Equiva- ient lin- Pipe	St. Ft. per Section	Equiva- lent 1 (n. Pipe	Sq. Fr. per Section	Equivo- lent tim- Pipe	Section	lent Lin Pipe	Sally per Solim	Equiva- lent Lin Pipe			
2 3 4 5 6 7 8 0 10 11 12 13 14 15 16	5 71/2 10 12/2 15 17/2 20 22/3 27/2 30 31/2 36 37/2 40	12 18 24 30 30 42 48 54 60 66 72 78 84 90 96	36 54 72 90 108 126 144 162 180 198 210 234 252 270 288	10 15 20 25 30 35 40 45 50 55 60 65 70 75 80	30 4 : 60 75 90 105 120 135 150 165 180 195 210 225 240	9 13 19 18 22 19 27 81 19 86 40 19 45 40 19 54 54 55 19 19 72	27 4019 51 6715 81 9419 108 1215 135 1485 162 1755 189 2026 216	712 1114 15 184 2252 2634 30 3354 4134 15 4834 5252 5614	2215 335 45 3654 6715 7851 1015 1125 1235 135 1405 1575 1684 1575	0 12 12 13 14 21 27 10 48 16 30 12 14	18 27 30 15 53 53 72 80 90 90 117 126 135 141	1114 014 1114 1214 1214 1214 1214 1214 1	2014 27 3314 4012 4714 0714 0714 0714 0714 1014			
17 18 19 20 21 22 23 24 25	42 / 2 45 47 / 2 50 52 / 2 57 / 2 60 62 / 2	102 108 114 120 126 132 138 144 150	306 324 342 360 378 396 414 432 450	85 90 95 100 105 110 115 120 125	255 270 285 300 315 330 345 360 375	76 (2 81 85 (2 90 91 (7 90 103 (1 108 11 2 (2)	229 /2 243 256 /2 270 283 /2 - 297 310 /2 424 337 /2	6374 6714 7114 75 7814 8214 8014 9374	20213 21304 2237 23614 24713 25814 270 28174	51 54 57 60 63 60 72 75	153 162 171 180 180 198 207 216 225	1811 1811 4714 1017 514 5614	109 11454 12151 12654 135 14154 1554 162 1653			

* In estimating length of radiator allow by inch for each plug or husbing.

Width of section 9 inches, width of legs 9 4 inches. Additional measurements on pages 202 and 203. Made in twin and single connections. Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

REGINA
FOUR-COLUMN
PLAIN



FOR STEAM OR WATER

REGINA FOUR-COLUMN PLAIN RADIATORS FOR STEAM OR WATER CAPACITIES AND DIMENSIONS

	*						HEATIN	NG SUR	FACE						
No.	Length 3 in.	45" in	Height	38" in	Height	32" in	Height	26" in	Height	22" in	Height	20" in	Height	18" in	Height
of	per Section	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	6½ Sq. Ft. per Section	Equiva- lent 1 in. Pipe	5 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	3½ Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19	6 9 12 15 18 21 24 27 30 33 36 39 42 45 48 51 54	20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190	60 90 120 150 180 210 240 270 300 330 360 390 420 450 480 510 540 570	16 24 32 40 48 56 64 72 80 88 96 104 112 120 128 136 144 152	48 72 96 120 144 168 192 216 240 264 288 312 336 360 384 408 432 456	13 $19\frac{1}{2}$ 26 $32\frac{1}{2}$ 39 $45\frac{1}{2}$ 52 $58\frac{1}{2}$ 65 $71\frac{1}{2}$ 78 $84\frac{1}{2}$ $97\frac{1}{2}$ 104 $110\frac{1}{2}$ 117 $123\frac{1}{2}$	39 58½ 78 97½ 117 136½ 156 175½ 195 214½ 234 253½ 273 292½ 312 331½ 351 370½	10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95	30 45 60 75 90 105 120 135 150 165 180 195 210 225 240 255 270 285	8 12 16 20 24 28 32 36 40 44 48 52 56 60 64 68 72 76	24 36 48 60 72 84 96 108 120 132 144 156 168 180 192 204 216 228	7 $10\frac{1}{2}$ 14 $17\frac{1}{2}$ 21 $24\frac{1}{2}$ 28 $31\frac{1}{2}$ 35 $38\frac{1}{2}$ 42 $45\frac{1}{2}$ 49 $52\frac{1}{2}$ 56 $59\frac{1}{2}$ 63 $66\frac{1}{2}$	21 31½ 42 52½ 63 73½ 84 94½ 105 115½ 126 136½ 147 157½ 168 178½ 189 199½	6 9 12 15 18 21 24 27 30 33 36 39 42 45 48 51 54 57	18 27 36 45 54 63 72 81 90 99 108 117 126 135 144 153 162 171
20 21 22 23 24 25	60 63 66 69 72 75	200 210 220 230 240 250	600 630 660 690 720 750	160 168 176 184 192 200	480 504 528 552 576 600	130 $136\frac{1}{2}$ 143 $149\frac{1}{2}$ 156 $162\frac{1}{6}$	390 409½ 429 448½ 468 487½	100 105 110 115 120 125	300 315 330 345 360 375	80 84 88 92 96 100	240 252 264 276 288 300	70 73½ 77 80½ 84 87⅓	210 $220\frac{1}{2}$ 231 $241\frac{1}{2}$ 252 $262\frac{1}{2}$	60 63 66 69 72 75	180 189 198 207 216 225

*In estimating length of radiator allow ½ inch for each plug or bushing.
Width of section 3 inches, width of legs 11¾ inches. Additional measurements on pages 202 and 203.
Made in twin and single connections. Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.



SAXON

HOSPITAL TWO-COLUMN PLAIN

Also made in Regina Pattern

These Radiators are made with special wide hubs making the distance from centre to centre of loops 345 inches and allowing easy access to the sections for cleaning purposes. Where desired, Radiators can be furnished with extra wide hubs 5 inches centre to centre of loops.

Orders should specify style of radiator and hub required,



WATER

STEAM

SAXON AND REGINA TWO-COLUMN HOSPITAL RADIATORS Plain-Round Top and Square Top-For Water or Steam CAPACITIES AND DIMENSIONS

							HEATIN	G SURF	ACE						
No.	Length	45" in	Height	38" in	Height	32" in	Height	30" in	Height	26" in	Height	23" in	Height	20" in	Height
of Sections	3½ in. per Section	Section	1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	3 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	21/3 Sq. Ft. per Section	1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe
3	7	10	30	8	24	63/3	20	6	18	51/3	16	42/3	14	4	12
	101/2	15	45	12	36	10	30	9	27	8	24	7	21	6	18
4	14	20	60	16	48	131/3	40	12	36	1033	32	91/3	28	8	24
5	171/2	25	75	20	60	1623	50	15	45	131/3	40	1123	35	10	30
6	21	30	90	24	72	20	60	18	54	16	48	14	42	12	36
7	241/2	35	105	28	84	231/3	70	21	63	$18\frac{2}{3}$	56	161/3	49	14	42
8	28	40	120	32	96	26%	80	24	72	211/3	64	1823	56	16	48
9	311/2	45	135	36	108	30	90	27	81	24	72	21	63	18	54
10	35	50	150	40	120	331/3	100	30	90	26%	80	231/3	70	20	60
11	381/2	55	165	44	132	363%	110	33	99	291/3	88	2533	4.1	22	66
12	42	60	180	48	144	40	120	36	108	32	96	28	84	24	72
13	451/2	65	195	52	156	4313	130	39	117	3423	104	301/3	91	26	78
14	49	70	210	56	168	462/3	140	42	126	371/3	112	3223	98	28	84
15	521/2	75	225	60	180	50	150	45	135	40	120	35	105	30	90
16	56	80	240	64	192	5313	160	48	144	4223	128	3713	112	32	96
17	591/2	85	255	68	204	5623	170	51	153	4513	136	3923	119	34	102
18	63	90	270	72	216	60	180	54	162	48	144	42	126	36	108
19	661/2	95	285	76	228	6313	190	57	171	50%	152	441/3	133	38	114
20	70	100	300	80	240	6633	200	60	180	5313	160	462/3	140	40	120
21	731/2	105	315	84	252	70	210	63	189	56	168	49	147	42	126
22	77	110	330	88	264	731/3	220	66	198	5834	176	5113	154	44	132
23	801/2	115	345	92	276	7623	230	69	207	611/3	184	5323	161	46	138
24	84	120	360	96	288	80	240	72	216	64	192	56	168	48	144
25	871/2	125	375	100	300	831/3	250	75	225	$66\frac{2}{3}$	200	581/3	175	-50	150

* In estimating length of radiator allow ½ inch for each plug or bushing.
Width of section 73% inches, width of legs 8¼ inches. Additional measurements on pages 202 and 203. Made in twin and single connections

Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.



STEAM

SAXON

HOSPITAL
THREE-COLUMN
PLAIN

Also made in Regina Pattern

These Radiators are made with special wide hubs making the distance from centre to centre of loops 3½ inches and allowing easy access to the sections for cleaning purposes. Where desired Radiators can be furnished with extra wide hubs 5 inches centre to centre of loops.

Orders should specify style of radiator and hub required:



WATER

SAXON AND REGINA THREE-COLUMN HOSPITAL RADIATORS Plain-Round and Square Top-For Water or Steam CAPACITIES AND DIMENSIONS

						HEATIN	G SURFA	CE					
No.	* Length	44" in	Height	38" in	Height	32" in	Height	26" in	Height	22" in	Height	18"in	Height
of Sections	3½ in. per Section	6 Sq. Ft. per Section	Equiva- lent 1 in Pipe	5 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	3¾ Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	2¼ Sq. Ft. per Section	Equiva lent 1 in. Pipe
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	7 $10\frac{1}{2}$ 14 $17\frac{1}{2}$ 21 $24\frac{1}{2}$ 28 $31\frac{1}{2}$ 35 $38\frac{1}{2}$ $45\frac{1}{2}$ 49 $52\frac{1}{2}$ 56 $59\frac{1}{2}$ 63 $66\frac{1}{2}$ 70 $73\frac{1}{2}$	12 18 24 30 36 42 48 54 60 66 72 78 84 90 96 102 108 114 120 126	36 54 72 90 108 126 144 162 180 198 216 234 252 270 288 306 324 342 360 378	10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105	30 45 60 75 90 105 120 135 150 165 180 195 210 225 240 255 270 285 300 315	9 13½ 18 22½ 27 31½ 36 40½ 45 49½ 54 58½ 63 67½ 72 76½ 72 76½ 81 85½ 90 94½	27 40½ 54 67½ 81 94½ 108 121½ 135 148½ 162 175½ 189 202½ 216 229½ 243 256½ 270 283½	7½ 11¼ 15 18¾ 22½ 26¼ 30 33¾ 37½ 41¼ 45 48¾ 52½ 56¼ 60 63¾ 67½ 71¼ 75 78¾	22 ½ 33¾ 45 56¼ 67½ 78¾ 90 101¼ 112½ 123¾ 135 146¼ 157½ 168¾ 180 191¼ 202½ 213¾ 225 236¼	6 9 12 15 18 21 24 27 30 33 36 39 42 45 48 51 54 57 60 63	18 27 36 45 54 63 72 81 90 99 108 117 126 135 144 153 162 171 180 189	4½ 6¾ 9 11¼ 13½ 15¾ 18 20¼ 22½ 24¾ 27 29¼ 31½ 33¾ 36 38¼ 40½ 42¾ 45 47¼	13½ 20¼ 27 33¾ 40½ 47¼ 54 67¼ 74¼ 81 87¾ 94½ 101¼ 108 114¾ 121½ 128¼ 135 141¾
22 23 24 25	77 80½ 84 87½	132 138 144 150	396 414 432 450	110 115 120 125	330 345 360 375	99 $103\frac{1}{2}$ 108 $112\frac{1}{2}$	297 310½ 324 337½	82½ 86¼ 90 93¾	247 ½ 258 ¾ 270 281 ¼	66 69 72 75	198 207 216 225	491/2 513/4 54 561/4	148½ 155¼ 162 168¾

* In estimating length of radiator allow ½ inch for each plug or bushing.

Width of section 9 inches, width of legs 9¼ inches. Additional measurements on pages 202 and 203. Made in twin and single connections.

Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

DAISY

TWO-COLUMN PLAIN OR ORNAMENTAL



FOR WATER OR STEAM

DAISY TWO-COLUMN PLAIN OR ORNAMENTAL RADIATORS

FOR STEAM OR WATER

CAPACITIES AND DIMENSIONS

					HEATIN	IG SURFA	CE				
No.	Length		Height		Height		Height	20" in	Height	16" in	Height
of Sections	3½" per Section	Sq. Ft. per Section	Equivalent 1-in. Pipe	3½ Sq. Ft. per Section	Equivalent 1-in. Pipe	2% Sq. Ft. per Section	Equivalent 1-in. Pipe	Sq. Ft. per Section	Equivalent 1-in. Pipe		Equivalen 1-in.
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	7 10½ 14 17½ 21 24½ 28 31½ 35 38½ 42 45½ 45½ 66½ 70 73½ 77 80½ 84 87½	8 12 16 20 24 28 32 36 40 44 48 52 56 60 64 68 72 76 80 84 88 92 96 100	24 36 48 60 72 84 96 108 120 132 144 156 168 180 192 204 216 228 240 252 264 276 288 300	623 10 1313 1623 20 2313 2623 30 3313 3623 40 4313 4623 50 5313 5623 60 6313 6623 70 7313 7623 80 8313	20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250	51/3 8 102/3 131/3 16 182/3 211/3 24 263/3 291/3 32 342/3 371/3 40 422/3 451/3 48 502/3 531/3 56 582/3 611/3 64 662/3	16 24 32 40 48 56 64 72 80 88 96 104 112 120 128 136 144 152 160 168 176 184 192 200	4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50	12 18 24 30 36 42 48 54 60 66 72 78 84 90 96 102 108 114 120 126 132 138 144 150	3 $4\frac{1}{2}$ 6 $7\frac{1}{2}$ 9 $10\frac{1}{2}$ $13\frac{1}{2}$ 15 $16\frac{1}{2}$ 18 $19\frac{1}{2}$ 21 $22\frac{1}{2}$ 24 $25\frac{1}{2}$ 27 $28\frac{1}{2}$ 30 $31\frac{1}{2}$ 33 $34\frac{1}{2}$ 36 $37\frac{1}{2}$	9 13½ 18 22½ 27 31½ 36 40½ 45 49½ 54 58½ 67½ 76½ 76½ 76½ 90 94½ 90 103½ 108 112½

*In estimating length of radiator allow ½ inch for each plug or bushing.
Width of section 5 inches, width of legs 6½ inches. Additional measurements on pages 202 and 203.
Made in twin and single connections. Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.



DAISY

FOUR-COLUMN PLAIN OR ORNAMENTAL FOR STEAM OR WATER

DAISY FOUR-COLUMN PLAIN OR ORNAMENTAL RADIATORS

FOR STEAM OR WATER

CAPACITIES AND DIMENSIONS

					I	HEATING	SURFAC	E					
37	* I anoth	42" in	Height	38" in	Height	32" in	Height	26" in	Height	20" in	Height	16" in	Height
No. of Sections	Length 41/8 in. per Section	9% Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	6% Sq. Ft. per Section	Equiva- lent 1 in. Pipe	5½ Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	814 1238 1612 2058 2434 2878 33 3718 4114 4538 4912 5358 5734 6178 66 7018 7414 7838 8212	191/3 29 382/3 481/3 58 672/3 771/3 87 962/3 1061/3 116 1252/3 1351/3 145 1542/3 1641/3 174 1832/3 1931/3	58 87 116 145 174 203 232 261 290 319 348 377 406 435 464 493 522 551 580	16 24 32 40 48 56 64 72 80 88 96 104 112 120 128 136 144 152 160	48 72 96 120 144 168 192 216 240 264 288 312 336 360 384 408 432 456 480	13½ 20 26⅔ 33⅓ 40 46⅔ 53⅓ 60 66⅔ 73⅓ 80 86⅔ 93⅓ 100 106⅔ 113⅓ 120 126⅔ 133⅓	40 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400	102/3 16 211/3 262/3 32 371/3 422/3 48 531/3 582/3 64 (91/3 742/3 80 851/3 902/3 96 1011/3 1062/3	32 48 64 80 96 112 128 144 160 176 192 208 224 240 256 272 288 304 32)	8 12 16 20 24 28 32 36 40 44 48 52 56 60 64 68 72 76 80	24 36 48 60 72 84 96 108 120 132 144 156 168 180 192 204 216 228 240	5 7 ½ 10 12 ½ 15 17 ½ 20 22 ½ 25 27 ½ 30 32 ½ 35 37 ½ 40 42 ½ 45 47 ½ 50	15 22½ 30 37½ 45 52½ 60 67½ 75 82½ 90 97½ 105 112½ 120 127½ 135 142½ 150
21 22 23 24 25	865/8 903/4 947/8 99 1031/8	203 2123/3 2221/3 232 2412/3	609 638 667 696 725	168 176 184 192 200	504 528 552 576 600	140 $146\frac{2}{3}$ $153\frac{1}{3}$ 160 $166\frac{2}{3}$	420 440 460 480 500	112 117½ 122¾ 128 133⅓	336 352 368 384 400	84 88 92 96 100	252 264 276 288 300	52½ 55 57½ 60 62½	157½ 165 172½ 180. 187½

* In estimating length of radiator allow ½ inch for each plug or bushing.
Width of section 8¼ inches, width of leg 8½ inches. Additional measurements on pages 202 and 203.
Made in twin and single connections. Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.



FAVORITE

TWO-COLUMN PLAIN OR ORNAMENTAL FOR STEAM OR WATER

FAVORITE TWO-COLUMN PLAIN OR ORNAMENTAL RADIATORS

FOR STEAM OR WATER

CAPACITIES AND DIMENSIONS

	de				Н	EATING S	URFACE				
No.	Length	38" in	Height	32" in	Height	26" in	Height	20" in	Height	16" in	Height
of Sections	3½" per Section	Sq. Ft. per Section	Equivalent 1-in. Pipe		Equivalent 1-in.	22/3 Sq. Ft. per Section	Equivalent 1-in Pipe	Sq. Ft. per Section	Equivalent 1-in, Pipe	Sq. Ft. per Section	Equivalen 1-in. Pipe
2	7	8	24	623	20	51/3	16	4	12	3	9
3	101/2	12	36	10	30	8	24	6	18	41/2	131/2
4	14	16	48	131/3	40	103/3	32	8	24	6	18
5	171/2	20	60	16%	50	1313	40	10	30	712	22½ 27
6	21	24 28 32 36	72	20	60	16	48	12	36	9	27
7	241/2	28	84	231/3	70	18%	56	14	42	101/2	3112
8	28	32	96	2633	80	211/3	64	16	48	12	36
9	311/2	36	108	30	90	24	72	18	54	131/2	4012
10	35	40	120	331/3	100	26%	80	20	60	15	45
11	381/2	44	132	3623	110	2913	88	22 24 26 28	66	1652	491/2
12	42	48	144	40	120	32	96	24	72 78	18	54
13	451/2	52	156	431/3	130	3436	104	26	78	191/2	5836
14	49	56	168	4623	140	371/3	112	28	84	21	581/2 63
15	521/2	60	180	50	150	40	120	30	90	221/2	6712
16	56	64	192	531/3	160	423%	128	32	96	24	$\frac{671_{2}}{72}$
17	591/2	68	204	5633	170	4513	136	34	102	251/2	761/2
18	63	72	216	60	180	48	144	36	108	27	81
19	661/2	76	228	631/3	190	5033	152	38	114	281/2	8512
20	70	80	240	6623	200	531/3	160	40	120	30	90
21	731/2	84	252	70	210	56	168	42	126	311/2	941/2
22	77	88	264	731/3	220	5833	176	44	132	33	94½ 99
20 21 22 23	801/2	92	276	7633	230	6113	184	46	138	341/2	10312
24	84	96	288	80	240	64	192	48	144	36	108
25	871/2	100	300	831/3	250	663/3	200	50	150	371/2	1121/2

*In estimating length of radiator allow ½ inch for each plug or bushing.
Width of section 5 inches, width of legs 6½ inches. Additional measurements on pages 202 and 203.
Made in twin and single connections. Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

FAVORITE

FOUR-COLUMN

SAFFORD RADIATORS



FOR STEAM OR WATER

FAVORITE FOUR-COLUMN PLAIN OR ORNAMENTAL RADIATORS

FOR STEAM OR WATER

CAPACITIES AND DIMENSIONS

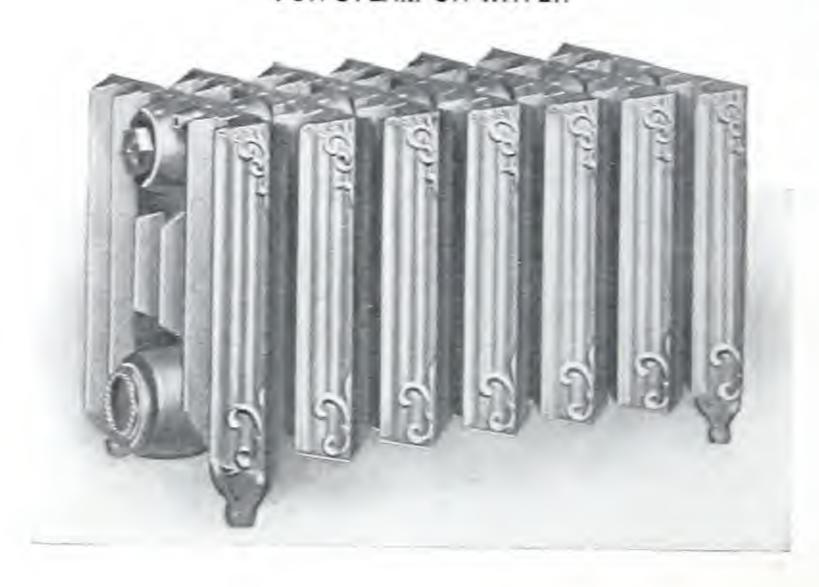
No.					1	HEATING	SURFAC	E					
No.	Length	The second secon	Height	38" in	Height		Height		Height	20" (n	Height	107" In	Height
Sections	4½ in. per Section	9% Sq. Ft. per Section	Equiva- lent I in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	623 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	514 Sq. Ft. per Section	Equiva- lent 1 in Pipe	Sq. Ft. per Section	Equiva- lent 1 in Pipe	Sq. Ft. per Section	Equiva lent l in. Pipe
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	814 1238 1612 2058 2434 2878 33 3718 4114 4538 4916 5358 5734 6178 66 7018 7414 7838 8216 8658 9034 9478 99 10318	19 1/4 29 38 3/4 48 3/4 58 67 3/4 87 96 3/4 106 1/4 116 125 3/4 135 3/4 145 154 3/4 164 3/4 174 183 3/4 193 3/4 203 212 3/4 222 3/4 232 241 3/4	58 87 116 145 174 203 232 261 290 319 348 377 406 435 464 493 522 551 580 609 638 667 696 725	16 24 32 40 48 56 64 72 80 88 96 104 112 120 128 136 144 152 160 168 176 184 192 200	48 72 96 120 144 168 192 216 240 264 288 312 336 360 384 408 432 456 480 504 528 552 576 600	13½ 20 26⅔ 33½ 40 46⅔ 53⅓ 60 66⅔ 73⅓ 80 86⅔ 93⅓ 100 106⅔ 113⅓ 120 126⅗ 133⅓ 140 146⅗ 153⅓ 160 166⅗ 160 166⅗	40 60 80 100 120 140 160 180 200 240 260 280 300 320 340 360 380 400 420 440 460 480 500	1044 16 2144 2623 32 3744 4234 48 5344 5844 5844 5844 5844 5844 5844	32 48 64 80 96 112 128 144 160 176 192 208 224 240 256 272 288 304 323 368 352 368 384 400	8 12 16 20 24 28 32 36 44 48 55 64 68 72 76 80 84 88 96 100	24 36 48 60 72 84 96 108 120 132 144 156 168 180 102 204 216 228 240 252 264 276 288 300	5 7 12 12 12 12 12 12 12 12 12 12 12 12 12	15 2215 30 3715 45 5215 60 6715 75 8215 90 9715 105 11215 12715 135 14215 150 15715 180 18715

^{*} In estimating length of radiator allow 1/2 inch for each plug or bushing.
Width of section 8/4 inches, width of leg 81/2 inches. Additional measurements on pages 202 and 203.
Made in twin and single connections. Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

ACME

FLUE WINDOW-ORNAMENTAL FIVE-COLUMN

FOR STEAM OR WATER



ACME FIVE-COLUMN FLUE WINDOW ORNAMENTAL RADIATORS

FOR STEAM OR WATER

CAPACITIES AND DIMENSIONS

-					TTD LOWER	W-11-12-1-12-2		CALACITI	LS AND L	TMENSIO	N5
	*	2011	**			SURFACE	tion				
No.	Length		Height	18" in	Height	16" in	Height	14" in	Height	13" in	Height
of Sections	3" per Section	Sq. Ft. per Section	Equivalent 1-in. Pipe	5½ Sq. Ft. per Section	Equivalent 1-in. Pipe	42% Sq. Ft. per Section	Equivalent 1-in. Pipe	Sq. Ft. per Section	Equivalent 1-in, Pipe		Equivaler 1-in.
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	6 9 12 15 18 21 24 27 30 33 36 39 42 45 48 51 54	12 18 24 30 36 42 48 54 60 66 72 78 84 90 96 102 108	36 54 72 90 108 126 144 162 180 198 216 234 252 270 288 306 324	10 ² / ₃ 16 21 ¹ / ₃ 26 ² / ₃ 32 37 ¹ / ₃ 42 ² / ₃ 48 53 ¹ / ₃ 58 ² / ₃ 64 69 ¹ / ₃ 74 ² / ₃ 80 85 ¹ / ₃ 90 ² / ₃ 96	32 48 64 80 96 112 128 144 160 176 192 208 224 240 256 272 288	913 14 1833 2313 28 3233 3713 42 4623 5113 56 6023 6513 70 7423 7913	28 42 56 70 84 98 112 126 140 154 168 182 196 210 224 238	8 12 16 20 24 28 32 36 40 44 48 52 56 60 64 68 72	24 36 48 60 72 84 96 108 120 132 144 156 168 180 192 204	71/3 11 142/3 181/3 22 252/3 291/3 33 362/3 401/3 44 472/3 511/3 55 582/3 621/3	22 33 44 55 66 77 88 99 110 121 132 143 154 165 176 187
19 20 21	57 60 63	114 120 126	342 360 378	$\begin{array}{c} 1011_{3} \\ 106_{23}^{2} \\ 112 \end{array}$	304 320 336	84 882/3 931/3 98	252 266 280 294	76 80	216 228 240	66 69 3/3 73 1/3	198 209 220
22 23 24	66 69 72	132 138 144	396 414 432	1171/3 1223/3 128	352 368 384	$102\frac{2}{3}$ $107\frac{1}{3}$ 112	308 322 336	84 88 92	252 264 276	77 8033 8413	231 242 253
25	75	150	450	1331/3	400	1162/3	350	96 100	288 300	88 9124	$\frac{264}{275}$

*In estimating length of radiator allow ½ inch for each plug or bushing.

Width of section 12¾ inches Width of leg 12¾ inches. Additional measurements on pages 202 and 203.

Made in twin and single connections. Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

REGINA

WINDOW RADIATOR SIX-COLUMN PLAIN



FOR STEAM OR WATER

REGINA SIX-COLUMN WINDOW PLAIN RADIATORS

FOR STEAM OR WATER

CAPACITIES AND DIMENSIONS

	*			4	HEATING	G SURFAC	E				
No.	Length	20" in	Height	18" in	Height	16" in	Height	14" in	Height	13" in	Height
of Sections	3" per Section	5 Sq. Ft. per Section	Equivalent 1-in, Pipe	Sq. Ft. per Section	Equivalent 1-in. Pipe	3¾ Sq. Ft. per Section	Equivalent 1-in. Pipe	3¼ Sq. Ft. per Section	Equivalent 1-in. Pipe	3 Sq. Ft. per Section	Equivalent 1-in. Pipe
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	6 9 12 15 18 21 24 27 30 33 36 39 42 45 48 51 54 57 60	10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95	30 45 60 75 90 105 120 135 150 165 180 195 210 225 240 255 270 285 300	8½ 12¾ 17 21¼ 25½ 29¾ 34 38¼ 46¾ 51 55¼ 59½ 63¾ 68 72¼ 76½ 80¾ 85	$25\frac{1}{2}$ $38\frac{1}{4}$ 51 $63\frac{3}{4}$ $76\frac{1}{2}$ $89\frac{1}{4}$ 102 $114\frac{3}{4}$ $127\frac{1}{2}$ $140\frac{1}{4}$ 153 $165\frac{3}{4}$ $178\frac{1}{2}$ $191\frac{1}{4}$ 204 $216\frac{3}{4}$ $229\frac{1}{2}$ $242\frac{1}{4}$ 255	$7\frac{1}{2}$ $11\frac{1}{4}$ 15 $18\frac{3}{4}$ $22\frac{1}{2}$ $26\frac{1}{4}$ 30 $33\frac{3}{4}$ $37\frac{1}{2}$ $41\frac{1}{4}$ 45 $48\frac{3}{4}$ $52\frac{1}{2}$ $56\frac{1}{4}$ 60 $63\frac{3}{4}$ $67\frac{1}{2}$ $71\frac{1}{4}$	$22\frac{1}{2}$ $33\frac{3}{4}$ 45 $56\frac{1}{4}$ $67\frac{1}{2}$ $78\frac{3}{4}$ 90 $101\frac{1}{4}$ $112\frac{1}{2}$ $123\frac{3}{4}$ 135 $146\frac{1}{4}$ $157\frac{1}{2}$ $168\frac{3}{4}$ 180 $191\frac{1}{4}$ $202\frac{1}{2}$ $213\frac{3}{4}$ 225	$6\frac{1}{2}$ $9\frac{3}{4}$ 13 $16\frac{1}{4}$ $19\frac{1}{2}$ $22\frac{3}{4}$ 26 $29\frac{1}{4}$ $32\frac{1}{2}$ $35\frac{1}{4}$ $45\frac{1}{2}$ $48\frac{3}{4}$ 52 $55\frac{1}{4}$ $58\frac{1}{2}$ $61\frac{3}{4}$	$19\frac{1}{2}$ $29\frac{1}{4}$ 39 $48\frac{3}{4}$ $58\frac{1}{2}$ $68\frac{1}{4}$ 78 $87\frac{3}{4}$ $97\frac{1}{2}$ $107\frac{1}{4}$ 117 $126\frac{3}{4}$ $136\frac{1}{2}$ $146\frac{1}{4}$ 156 $165\frac{3}{4}$ $175\frac{1}{2}$ $185\frac{1}{4}$ 195	6 9 12 15 18 21 24 27 30 33 36 39 42 45 48 51 54 57 60	18 27 36 45 54 63 72 81 90 99 108 117 126 135 144 153 162 171 180
21 22 23 24 25	63 66 69 72 75	105 110 115 120 125	315 330 345 360 375	89¼ 93½ 97¾ 102 106¼	$267\frac{3}{4}$ $280\frac{1}{2}$ $293\frac{1}{4}$ 306 $318\frac{3}{4}$	78¾ 82½ 86¼ 90 93¾	$236\frac{1}{4}$ $247\frac{1}{2}$ $258\frac{3}{4}$ 270 $281\frac{1}{4}$	68¼ 71½ 74¾ 78 81¼	2043/4 2143/2 2243/4 234 2433/4	63 66 69 72 75	189 198 207 216 225

* In estimating length of radiator allow ½ inch for each plug or bushing.

Width of section 12½ inches. Width of leg 12½ inches. Additional measurements on pages 202 and 203.

Made in twin and single connections. Tapped and bushed as per schedules, on pages 198 or 199 unless otherwise ordered.



STANDARD

WALL

FOR STEAM OR WATER



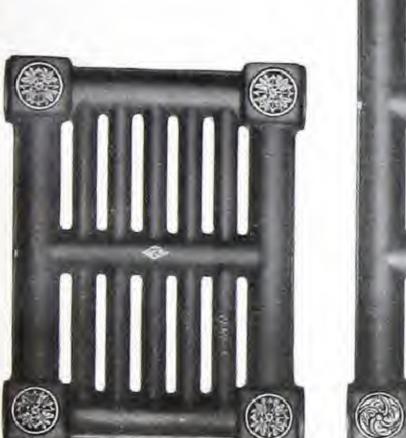
7-Foot Section

For measurements and dimensions, see page 161.

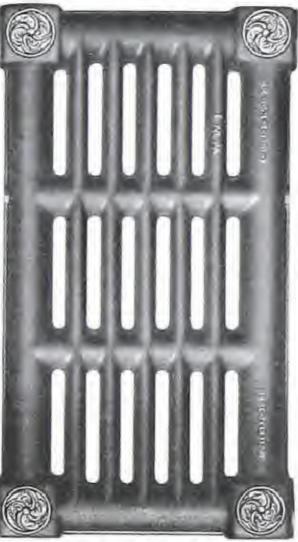
9-Foot Section

ONTARIO

WALL-PLAIN FOR WATER OR STEAM



5 Foot Section



7 Foot Section



9 Foot Section

For measurements and dimensions, see page 161.



12 Foot Section

PRINCESS

WALL-ORNAMENTAL FOR WATER OR STEAM



5 Foot Section



6 Foot Section



7 Foot Section For measurements and dimensions, see page 161.



9 Foot Section

WALL RADIATORS

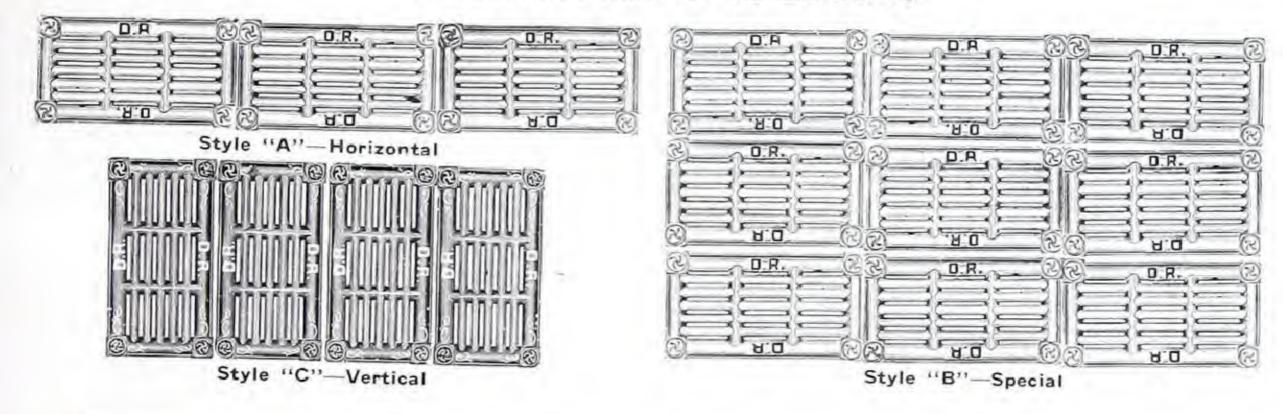
CAPACITIES AND DIMENSIONS

Pattern	Sq. Feet Heating Surface	Equiva- lent of 1" Pipe	Length Inches	Width Inches	Thick- ness Inches	centres of	between Tappings, thes
	Jurrace	1 Tipe	Theres	Thenes	Inches	End of Section	Side of Section
Standard Plain		21 27	$\frac{23\frac{3}{8}}{29\frac{3}{8}}$	13 13	$\frac{31}{8}$ $\frac{31}{8}$	$10\frac{1}{2}$ $10\frac{1}{2}$	$\frac{20\frac{3}{8}}{26\frac{1}{4}}$
Ontario Plain	7 9	15 21 27 36	17 24 24 28	13 13 13 15	$\frac{3}{3}$ $\frac{3}{3}$ $\frac{3}{16}$ $\frac{3}{5}$	10 10 10 11 ₁	14 1/8 21 21 21 24
Princess Ornamental	6 7	15 18 21 27	17 21 24 24	13 13 13 13	$\frac{3}{3}$ $\frac{3}{3}$ $\frac{3}{16}$	10 10 10 10	$14\frac{1}{8}$ $17\frac{3}{4}$ 21 21

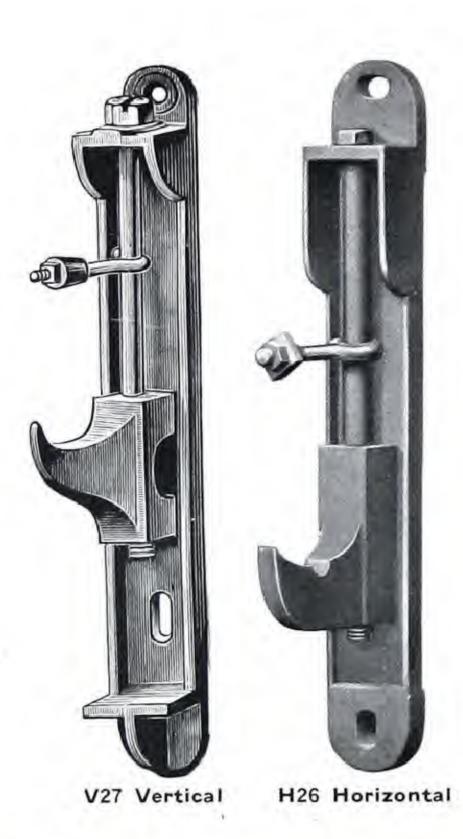
SAFFORD RADIATORS NEW STEAM CONNECTION FOR WALL RADIATORS

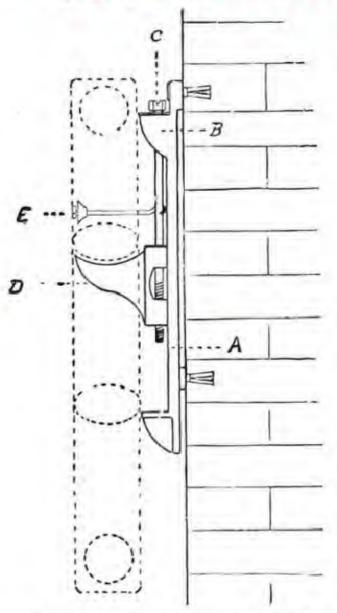


GENERAL FORMS OF ASSEMBLING



Any required number of sections can be assembled into Radiators in above illustrated forms. When redering be particular to state which style is required. Orders should be accompanied by sketches showing ize and style of connections desired.





A.—Wall Plate, anchored to wall by expansion bolts or screws.

B.—Saddle, through which passes a long screw.

C.—Bolt, having slotted head.

D.—Hook, by which the

radiator is supported. E.—Tie Bolt.

WALL RADIATOR BRACKETS

Patent 1916

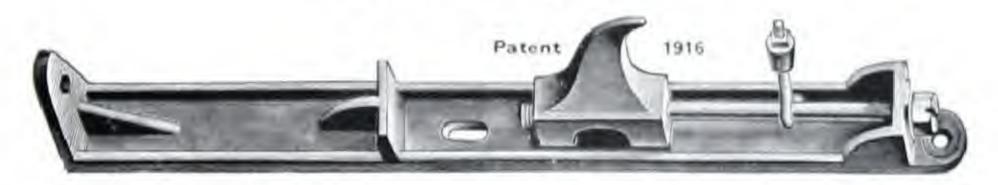
THESE Brackets are the result of many years' experience; they may be attached to a brick, concrete or any other wall. They hold the radiator securely, and provide for all expansion and contraction. Being adjustable, they are easily raised or lowered by means of a screw bolt, before or after the radiator is in place. The range of adjustment is 3 inches up or down.

The recommended location of the locknut is midway of the thread on long bolt, from which point the radiator may be raised or lowered 1½ inches.

For list price, see page 167.

No. H or V 28 DUCK-FOOT SUSPENSION BRACKET

Horizontal or Vertical



This support has the same features of adjustment and allowance for expansion and contraction as the No. V 27 Wall Suspension Bracket, but is provided with an extension to rest on floor.

Has no offset for baseboard.

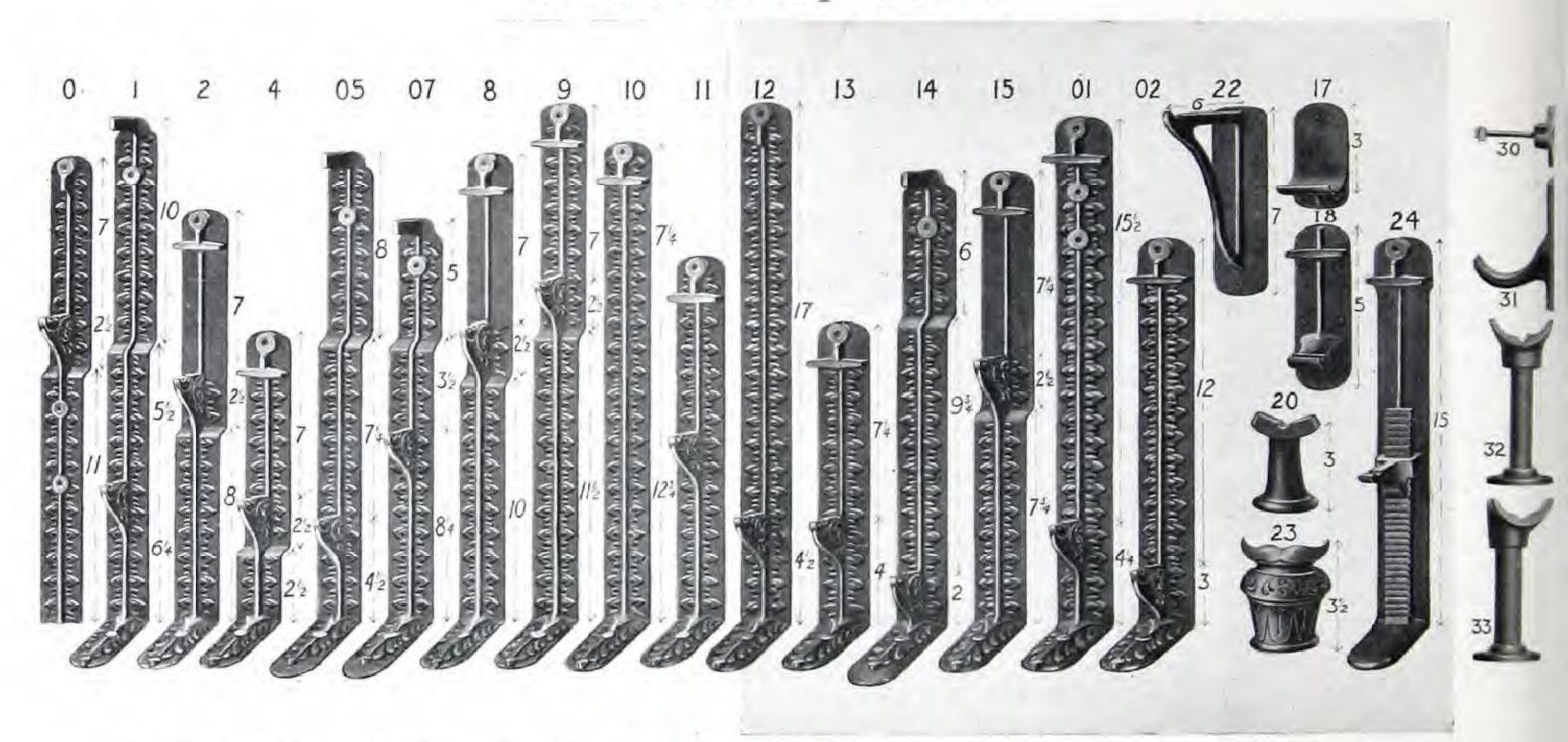
Height of centre of tapping from the floor, 834 inches.

Regularly furnished with one screw hole at top to secure bracket to wall, and one through foot to secure to floor.

When ordering the No. V 27 Suspension Wall Bracket, or the No. H or V 28 Duck-Foot Suspension Bracket separately, state whether for Vertical or Horizontal Radiators, also size of section.

For list price, see page 167.

WALL RADIATOR BRACKETS



No. 24 Adjustable Bracket (Patented) can be adjusted to any height above floor from 3 to 9 inches. For list price, see page 167.

WALL RADIATOR BRACKETS

List Prices

Nos.	List Price, Each	Nos.	List Price, Each	Nos.	List Price, Each	Nos.	List Price, Each
0	50 cents	10	50 cents	22	20 cents	30	50 cents
1	50 "	11	45 "	20	20	31	1.00 "
2	45 "	12	50	17	8	32	60
4	40 "	13	40 "	18	10	33	60
05	50 "	14	45 "	23	30		
07	45 "	15	45 "	24	60 **		
8	50 "	01	50 "	H26-V27	1.75 "		
9	50 "	02	45 "	H28-H28	2.35 "		

DIRECT-INDIRECT RADIATORS IDEAL FLUE VENTILATING RADIATORS FOR WATER OR STEAM

Attention is directed to the peculiar advantages of this type of radiator, when equipped with the Box-Base as a ventilating medium of the direct-indirect type.

The principle of construction of the Box-Base is such that all the air necessary for ventilation may be taken from without the building by means of air conduit in wall, and distributed through the Base into the interior or flue surface of radiator. The dampers in the Base may be adjusted to reduce the air supply if the outside temperature is very low, or the dampers may be entirely closed if desired, thus converting the radiator for the time into a direct radiator.

The special features of this Box-Base are simplicity of construction, ease of operation, and splendid distribution of air supply. The Base being entirely underneath the radiator and well recessed, is not liable to damage. The front of Base may be easily removed for cleaning purposes. Dampers may be operated by slight pressure of foot.



IDEAL

FLUE VENTILATING

FOR STEAM OR WATER



FOR STEAM OR WATER CAPACITIES AND DIMENSIONS

	- Or				HEATING	SURFAC.	E				
No. of	Length	42" in	Height	38" in	Height	32" in	Height	26" in	Height	20" in	Height
Sections	per Section	81/4 Sq. Ft. per Section	Equivalent 1-in. Pipe	7 Sq. Ft. per Section	Equivalent 1-in. Pipe	534 Sq. Ft. per Section	Equivalent 1-in. Pipe	4½ Sq. Ft. per Section	Equivalent 1-in. Pipe	3¼ Sq. Ft. per Section	Equivalen 1-in Pipe
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	$ \begin{array}{r} 6 \\ 9 \\ 12 \\ 15 \\ 18 \\ 21 \\ 24 \\ 27 \\ 30 \\ 33 \\ 36 \\ 39 \\ 42 \\ 45 \\ 48 \\ 51 \\ 57 \\ 60 \\ 63 \\ 66 \\ 69 \\ 72 \\ 75 \\ \end{array} $	$16\frac{1}{2}$ $24\frac{3}{4}$ 33 $41\frac{1}{4}$ $49\frac{1}{2}$ $57\frac{3}{4}$ 66 $74\frac{1}{4}$ $82\frac{1}{2}$ $90\frac{3}{4}$ 99 $107\frac{1}{4}$ $115\frac{1}{2}$ $123\frac{3}{4}$ 132 $140\frac{1}{4}$ $148\frac{1}{2}$ $156\frac{3}{4}$ 165 $173\frac{1}{4}$ $181\frac{1}{2}$ $189\frac{3}{4}$ 198 $206\frac{1}{4}$	$49\frac{1}{2}$ $74\frac{1}{4}$ 99 $123\frac{3}{4}$ $148\frac{1}{2}$ $173\frac{1}{4}$ 198 $222\frac{3}{4}$ $247\frac{1}{2}$ $272\frac{1}{4}$ 297 $321\frac{3}{4}$ $346\frac{1}{2}$ $371\frac{1}{4}$ 396 $420\frac{3}{4}$ $445\frac{1}{2}$ $470\frac{1}{4}$ 495 $519\frac{3}{4}$ $544\frac{1}{2}$ $569\frac{1}{4}$ 594 $618\frac{3}{4}$	14 21 28 35 42 49 56 63 70 77 84 91 98 105 112 119 126 133 140 147 154 161 168 175	42 63 84 105 126 147 168 189 210 231 252 273 294 315 336 357 378 399 420 441 462 483 504 525	$11\frac{1}{2}$ $17\frac{1}{4}$ 23 $28\frac{3}{4}$ $34\frac{1}{2}$ $40\frac{1}{4}$ 46 $51\frac{3}{4}$ $57\frac{1}{2}$ $63\frac{1}{4}$ 69 $74\frac{3}{4}$ $80\frac{1}{2}$ $86\frac{1}{4}$ 92 $97\frac{3}{4}$ $103\frac{1}{2}$ $109\frac{1}{4}$ 115 $120\frac{3}{4}$ $126\frac{1}{2}$ $132\frac{1}{4}$ 138 $143\frac{3}{4}$	$34\frac{1}{2}$ $51\frac{3}{4}$ 69 $86\frac{1}{4}$ $103\frac{1}{2}$ $120\frac{3}{4}$ 138 $155\frac{1}{4}$ $172\frac{1}{2}$ $189\frac{3}{4}$ 207 $224\frac{1}{4}$ $241\frac{1}{2}$ $258\frac{3}{4}$ 276 $293\frac{1}{4}$ $310\frac{1}{2}$ $327\frac{3}{4}$ 345 $362\frac{1}{4}$ $379\frac{1}{2}$ $396\frac{3}{4}$ 414 $431\frac{1}{4}$	9 $13\frac{1}{2}$ 18 $22\frac{1}{2}$ 27 $31\frac{1}{2}$ 36 $40\frac{1}{2}$ 45 $49\frac{1}{2}$ 54 $58\frac{1}{2}$ 63 $67\frac{1}{2}$ 72 $76\frac{1}{2}$ 81 $85\frac{1}{2}$ 90 $94\frac{1}{2}$ 99 $103\frac{1}{2}$ 108 $112\frac{1}{2}$	27 40½ 54 67½ 81 94½ 108 121½ 135 148½ 162 175½ 189 202½ 216 229½ 243 256½ 270 283½ 297 310½ 324 337½	6½ 9¾ 13 16¼ 19½ 22¾ 26 29¼ 32½ 35¾ 42¼ 45½ 48¾ 52 55¼ 58½ 61¾ 65 68¼ 71½ 74¾ 78 81¼	19½ 29¼ 39 48¾ 58½ 68¼ 78 87¾ 107¼ 117 126¾ 136½ 146¼ 156 165¾ 175½ 185¼ 195 204¾ 214½ 224¼ 234 243¾

*In estimating length of radiator allow ½ inch for each plug or bushing.

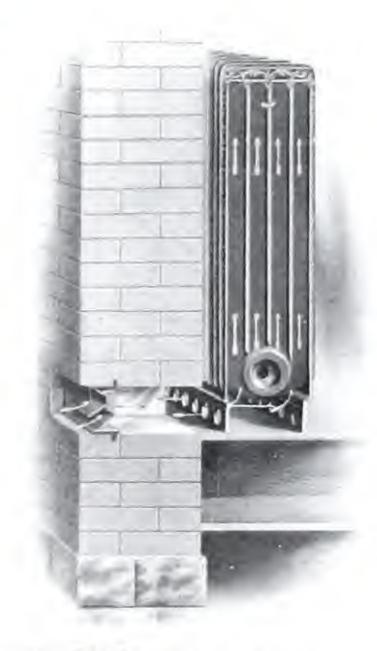
Width of section 8¾ inches, width of legs 8¾ inches. Additional measurements on pages 202 and 203. single connections. Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered. For information regarding ventilating bases, see pages 171 to 175.

Made in twin and

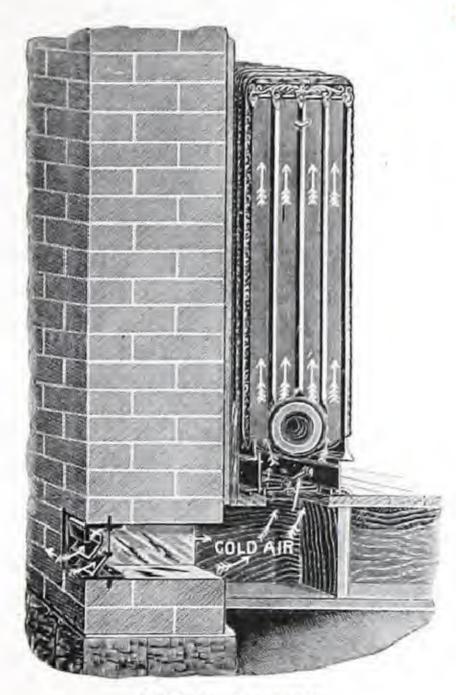
IDEAL VENTILA

FLUE VENTILATING DIRECT-INDIRECT RADIATORS

> FOR STEAM OR WATER



Back Air Inlet



Bottom Air Inlet

IDEAL FLUE VENTILATING DIRECT-INDIRECT RADIATOR BOX BASES

Measurements of Air Inlets

Floor Inlet

Where the air is brought through the floor to radiator (see page 171) the dimensions of opening in floor to be covered by damper in base should be as follows:—

Back Inlet

Where the air is brought direct through the wall into the base, (see page 171) the outside measurements of collar for attaching fresh air duct are as follows:—

Base	Inches	Base	Inches	Base	Inches	Base	Inches
5 Section	5 x7	13 Section	4½x26	3 Section	3 x23/8	12 Section	3½x23
6 "	$4\frac{1}{2}$ x10	14 "	$4\frac{1}{2}x29$	4 "	3 x 4	13 "	3½x26
7 11	4½x11	15 "	4½x32	5 "	3 x 7	14 "	3½x29
8 "	4½x11¼	16 "	4½x35	6 "	3 x 8½	15 "	3½x32
9 "	$4\frac{1}{2}x14$	17 "	4½x38	7 "	3½x11	16 "	3½x35
10 "	$4\frac{1}{2}x17$	18 "	4½x41	8 "	3½x11¼	17 "	3½x38
11 "	$4\frac{1}{2}x20$	19 "	41/2×44	9 "	3½x14	18 ''	3½x41
12 "	4½x23	20 "	4½x47	10 "	3½x17	19	3½x44
		79.70		11 "	3½x20	20 "	3½x47

The usual openings through walls for the above box bases are:—Up to and including 9 sections a $3\frac{1}{2}x$ 8½ inch opening; 10 sections and above $3\frac{1}{2}x16$ inch opening.

If desired, we can supply these bases for radiators of 7 sections to 20 sections with a flange for back air inlet $3x8\frac{1}{2}$ inches.

Note.—In ordering, please state whether back or floor inlet is desired.

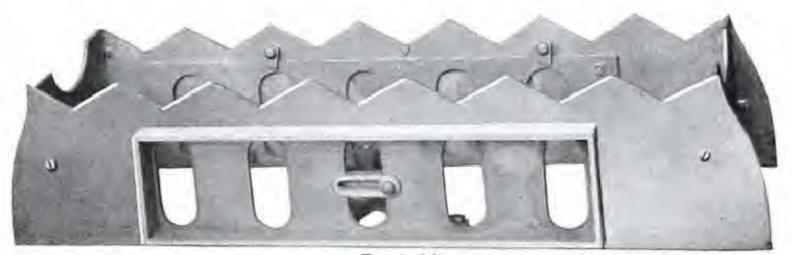
IDEAL FLUE VENTILATING DIRECT-INDIRECT RADIATOR BOX BASES

List Prices

Base	for	3	Section	Radiator,	\$1.20	each
Base	for	4	Section	Radiator,	1.60	each
Base	for	5	Section	Radiator,	2.00	each
Base	for	6	Section	Radiator,	2.40	each
Base	for	7	Section	Radiator,	2.80	each
Base	for	8	Section	Radiator,	3.20	each
Base	for	9	Section	Radiator,	3.60	each
Base	for	10	Section	Radiator,	4.00	each
Base	for	11	Section	Radiator,	4.40	each
Base	for	12	Section	Radiator,	4.80	each



Front View Showing front damper open and back air inlet closed.



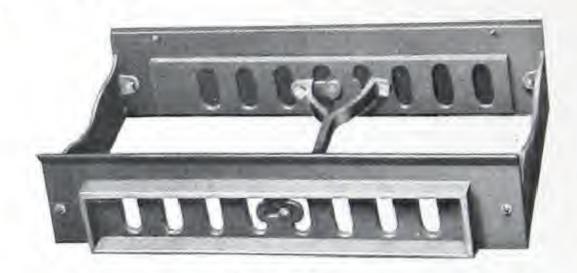
Showing back air inlet damper open and front damper closed. See measurements, page 172.

ADJUSTABLE BOX BASE FOR DIRECT-INDIRECT RADIATORS

FOR STEAM OR WATER



Front View



Back View

As will be seen by above illustration the dampers provided with this new box base are arranged so that when the back air inlet is opened the damper slide in the front of base is automatically closed, and vice versa. Where required we can supply these bases with floor inlet dampers arranged to operate in the same manner.

This new and improved portable Ventilating Base has been designed with a view to obviating the necessity for special radiator sections. It can be readily adjusted to any of our regular stock patterns of Safford direct Radiators.

The bases and plates for both bottom opening and front and back opening box bases are made for Saxon, Victoria and Regina, two

column, three column and four column radiators. They have been designed with a view to supplying amount of air desired, and not with special reference to size of Radiator. Thus a 5 section box base may be used under Radiators of 7, 9 sections or larger (in odd sections). A 6 section base may be adjusted to Radiators of 8, 10 sections or larger (in even sections). These bases will enclose 5 or 6 middle loops respectively of any of Radiators mentioned.

ADJUSTABLE BOX BASE FOR DIRECT-INDIRECT RADIATORS

Sizes of Collars for Back and Floor Inlet Dampers

- 1	2 and 3 COLUMN	BASES	4 COLUMN BASES		
No. of Base Sections	Size of Collar for Back Air Inlet, ins.	Size of Floor Inlet Damper, ins.	No. of Base Sections	Size of Collar for Back Air Inlet, ins.	Size of Floor Inlet Damper ins.
5	234 x 5	5½ x 6½	5	234 x 9	5½ x 6½
7	2 ³ / ₄ x 9 2 ³ / ₄ x 9	5½ x 6½ 5½ x 11	0 7	$2^{3}_{4} \times 14$ $2^{3}_{4} \times 14$	5½ x 11 5½ x 11
3	234 x 9	5½ x 11	8	234 x 14	5½ x 18
9	234 x 9	5½ x 11	9	$2^{34} \times 14$	512 x 18
10	234 x 14	5½ x 11	10	234×19	51/2 x 281/2
11	$2\frac{3}{4} \times 14$	5½ x 18	11	234 x 19	512 x 2812
12	$2\frac{3}{4} \times 14$	5½ x 18	12	234×19	51/2 x 361/2
13	$2\frac{3}{4} \times 14$	5½ x 18	13	234×19	51/2 x 361/2
14	234 x 14	5½ x 18	14	234 x 19	51/2 x 443/4
15	234 x 19	5½ x 28½	15	234 x 23	5 ½ x 4434

Note:—Where Floor Inlet Dampers are required, same should be specially stated when ordering. Back Inlet Dampers will be furnished unless otherwise specified.

Description	List Price	Description	List Price	
Direct-Indirect and Adjustable Box Bases For 5 Section Radiators For 6 Section Radiators For 7 Section Radiators For 8 Section Radiators For 9 Section Radiators For 10 Section Radiators	\$ 5.00 each 6.00 " 7.00 " 8.00 "	Direct-Indirect and Adjustable Box Bases For 11 Section Radiators For 12 Section Radiators For 13 Section Radiators For 14 Section Radiators For 15 Section Radiators	\$11.00 each 12.00 " 13.00 " 14.00 " 15.00 "	

OUTSIDE WALL BOXES FOR DIRECT-INDIRECT RADIATORS



These Wall Boxes are constructed in a most substantial manner, the baffle plates and brass wire screen are so arranged as to render them storm and insect proof.

Outside measurement 5 x 171/2 inches to conform with brick measure.

Outside measurement of flange for iron sleeve or collar 43/4 x 17 inches.

List price, each \$4.00

CLIMAX

INDIRECT RADIATORS



FOR STEAM OR WATER

CAPACITIES AND DIMENSIONS

Name	Length in inches	Height in inches	Width in inches	Distance Centre to Centre of Tapping	Number Square Feet
Climax	36	11	4	7	13

Climax Indirect sections are connected together at top and bottom with either 2 inch Safford right and left screw nipples or 2 inch right and left hexagon nipples, For additional measurements, see page 178.

CLIMAX INDIRECT RADIATORS

FOR STEAM OR WATER

DATA FOR CLIMAX RADIATORS

Sections in Stack	Sq. Feet of Heating Surface	Area Cold Air Supply Sq. Ins.	Area Hot Air Flue Sq. Ins.	Size for Brickwork Hot Air Flue, Ins.	Size Register Inches	Ratio 1 to 30	Ratio 1 to 35	Ratio 1 to 40
0	0.0	- 4	d'o	0 0	0-10	700	010	1.040
$\begin{array}{c} 2 \\ 3 \\ 4 \\ 5 \end{array}$	26	$\frac{54}{72}$	72 96	8x 8	9x12	780	910	1,040
3	39 52	90	120	8x12 8x12	10x14 12x15	$1,170 \\ 1,560$	1,365	1,560
4	65	108	144	12x12	12x15 12x19	1,950	1,820	2,080
9	0.5	100	144	12X12	12X19	1,990	2,275	2,600
6	78	126	168	12x12	14x22	2,340	2,730	3,120
$\frac{6}{7}$	91	144	192	12x16	14x24	2,730	3,185	3,640
8	104	162	226	12x16	16x20	3,120	3,640	4,160
8 9	117	180	240	12x20	16x24	3,510	4,095	4,680
10	130	198	264	12x20	20x20	3,900	4,550	5,200
11	143	216	288	12x24	20x24	4,290	5,005	5,720
12	156	234	312	12x24	20x24	4,680	5,460	6,240

Note: Sections will be shipped separately unless orders specify that they are required assembled in stacks.

SANITARY SCHOOL PIN INDIRECT RADIATORS

FOR STEAM OR WATER



STEAM SECTION



WATER SECTION

SANITARY SCHOOL PIN INDIRECT RADIATORS

FOR STEAM OR WATER

CAPACITIES AND DIMENSIONS

Name	Length in Inches	Height in Inches	Height of Connecting Points	Width Occupied in Stack	Distance Centre to Centre Opening	Square Feet
School Pin	36 34 ¾	$13\frac{7}{8}$ $11\frac{1}{2}$	15 13¾	33/4 27/8	11 ³ / ₈ 10 ¹ / ₈	20 15

School Pin Indirect sections (20 square foot sections) are connected with 2 inch right and left hexagon nipples.

School Pin Indirect sections (15 square foot sections) are connected with 2 inch Safford right and left screw nipples only.

When tappings are at A, B, C or D, add 1/4 inch to height or length of section to allow for hub.

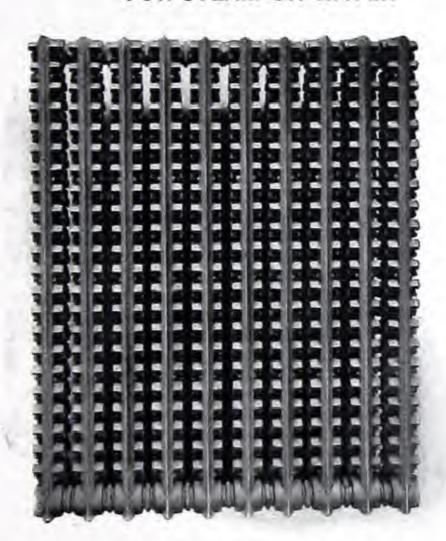
Sections will be shipped separately, unless orders specify that they are required assembled in stacks. When ordered assembled, they will be shipped in stacks of not more than six sections each.

Note:—We can also supply Gold Pin Indirect Radiators containing 10 square feet of heating surface per section. Length 36 inches, height 7½ inches, height at connecting point 11 inches, width each section occupies in stack 2¾ inches, distance between centres of openings six inches.

CAST IRON HOT-BLAST VENTILATING RADIATORS

FOR STEAM OR WATER

FOR FAN AND BLOWER WORK



Front View of Ten-Section Group

Showing a Section cut through centre

CAST IRON HOT-BLAST VENTILATING RADIATORS

REGULAR SECTION—RATINGS AND FREE AREAS

30" Section (Steam only)-8 sq. ft. Height, 29 1/8". Width, 91/8"

REGULAR SECTION—RATINGS AND FREE AREAS

40" Section (Steam or Water)—10.75 sq. ft. Height, $40\frac{14}{16}$ ". Width, $9\frac{1}{8}$ ".

		53/8" C of Se	entres	5" Co	entres	45%" C of Se	Centres ctions		entres			53/8" C of Sec	entres ctions		entres ctions	45%" C of Sec	entres		entres
No. of Sec- tions	Sq. ft. of Heat- ing	E 4 5 5 1	f Face	Stand of F	, 44% ace	37% 0	of Face	24% o	f Face	No. of Sec- tions	Sq. ft. of Heat- ing	52% o	f Face	Stand of F	, 44 % ace	37% o	f Face	24%	of Fac
in Stack	Sur-	Net Air Space in Sq. Ft.	† Width of Stack in Ins.	Net Air Space in Sq. Ft.	†Width of Stack in Ins.	Net Air Space in Sq. Ft.	† Width of Stack in Ins.	Net Air Space in Sq. Ft.	Width of Stack in Ins.	in Stack	Sur- face	Net Air Space in Sq. Ft.	† Width of Stack in Ins.	Net Air Space in Sq. Ft.	† Width of Stack in Ins.	Net Air Space in Sq. Ft.	† Width of Stack in Ins.	Net Air Space in Sq. Ft.	Width of Stack in Ins.
10 11 12 13 14 15 16 17 18 19 20 21 22 23	80 88 96 104 112 120 128 136 144 152 160 168 176 184	5.42 5.96 6.50 7.04 7.57 8.11 9.65 9.19 9.73 10.27 10.81 11.35 11.89 12.42	54 59 65 70 75 81 86 91 97 102 108 113 118 124	4.60 5.06 5.52 5.98 6.44 6.90 7.36 7.82 8.28 8.75 9.21 9.67 10.13 10.59	50 55 60 65 70 75 80 85 90 95 100 105 110 115	3.90 4.29 4.68 5.07 5.46 5.85 6.24 6.63 7.02 7.41 7.80 8.19 8.58 8.97	46 51 55 60 65 69 74 79 83 88 92 97 102 106	2.25 2.81 3.06 3.32 3.57 3.83 4.08 4.34 4.59 4.85 5.11 5.36 5.62 5.87	40 44 48 52 56 60 64 68 72 76 80 84 88 92	10 11 12 13 14 15 16 17 18 19 20 21 22 23	107.50 118.25 129.00 139.75 150.50 161.25 172.00 182.75 193.50 204.25 215.00 225.75 236.50 247.25	8.74 9.47 10.19 10.91 11.64 12.36 13.09 13.82 14.54	54 59 65 70 75 81 86 91 97 102 108 113 118 124	6.20 6.82 7.44 8.06 8.68 9.30 9.92 10.54 11.16 11.78 12.40 13.02 13.64 14.26	50 55 60 65 70 75 80 85 90 95 100 105 110 115	5.25 5.77 6.30 6.82 7.35 7.87 8.40 8.92 9.45 9.97 10.50 11.02 11.55 12.07	51	3.50 3.85 4.20 4.55 4.90 5.25 5.60 5.95 6.30 6.65 7.00 7.35 7.70 8.05	40 44 48 52 56 60 64 68 72 76 80 84 88 92

CAST IRON HOT-BLAST VENTILATING RADIATORS

REGULAR SECTION—RATINGS AND FREE AREAS 50" Section (Steam or Water)—13.5 sq. ft. Height, 50 || ". Width, 9 || ".

REGULAR SECTION—RATINGS AND FREE AREAS 60" Section (Steam or Water)—16 sq. ft. Height, 60).".
Width, 914".

		53%" C of Se	entres ctions	5" Ce of Sec			ctions		entres ections			5%" Co	entres tions	of Sec		of Sec	entres ctions
No. of Sec- tions	Sq. ft. of Heat- ing	52% o	f Face	Stand, of I		37% o	f Face	24%	of Face	No. of Ser- tions	Sq ft. of Heat- ing		f Face	Stand of b	44°, ace	375, 0	t Ence
in Stack	Sur-	Net Air Space in Sq. Ft.	† Width of Stack in Ins.	Net Air Spacein Sq. Ft.	† Width of Stack in Ins.	Net Air Spacein Sq. Ft.	†Width of Stack in Ins.	Net Agr Space in Sq. Ft.	Width of Stack in Ins.	Stack.	Sur- face	Net Air Space in Sq. Fr.	+ Wideh of Stack in Ins	Net Arr Space in	tWidth of Stack in fus.	Net Air Spaterin	1 Width of Stack
10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	135.0 148.5 162.0 175.5 189.0 202.5 216.0 229.5 243.0 256.5 270.0 283.5 297.0 310.5 324.0	12.65 13.55 14.45 15.35 16.25 17.15 18.05 18.95 19.85 20.75	54 59 65 70 75 81 86 91 97 102 108 113 118 124 129	7.68 8.45 9.22 9.99 10.76 11.53 12.30 13.07 13.84 14.59 15.36 16.13 16.90 17.67 18.44	50 55 60 65 70 75 80 85 90 95 100 105 110 115 120	6.50 7.15 7.80 8.45 9.10 9.75 10.40 11.05 11.70 12.35 13.00 13.65 14.30 14.95 15.60	46 51 55 60 65 69 74 79 83 88 92 97 102 106 111	ctions can	55	10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	160 176 192 208 224 240 256 272 288 304 320 336 352 368 384	10 85 11 93 13 00 14 08 15 15 10 23 17 81 18 39 19 46 20 54 21 62 22 70 23 78 24 85 25 93	54 50 65 70 75 81 86 91 97 102 108 113 118 124 129	9 21 10 13 11 05 11 97 12 89 13 81 14 73 15 65 16 57 17 50 18 42 19 34 20 26 21 18 22 10	50 55 60 65 70 75 80 85 95 100 105 115 120	7 81 8 50 9 37 10 15 10 93 11 71 12 40 13 27 14 83 15 61 16 39 17 17 17 95 18 73	46 51 55 60 65 69 74 79 83 83 92 97 106 111

CAST IRON HOT-BLAST VENTILATING RADIATORS

REGULAR SECTION—RATINGS AND FREE AREAS

72" Section (Steam or Water)—19 sq. ft. Height, $72\frac{3}{32}$ " Width, $9\frac{1}{8}$ ".

NARROW SECTION-RATINGS AND FREE AREAS

Narrow 40" Section-7.5 sq. ft. Height, 41 4". Width, 634"

		53/8" Cen	t, of Sec's	5" Cent	of Sec's	45%" Cen	t.of Sec's			53/8" Cen	t. of Sec's	5" Cent.	of Sec's	45%" Cer	nt. of Sec's
of Sec- tions	Sq. Ft. of Heat- ing	5.276	of Face	Stand of I	. 44% Face	37% o	f Face	No. of Sec- tions	Sq. Ft. of Heat- ing		f Face	Stand. of F	44% ace	37% (of Face
in Stack	Sur- face	Net Air Space in Sq. Ft.		Net Air Space in Sq. Ft.	†Width of Stack in Ins.		†Width of Stack in Ins.	in Stack	Sur- face	Net Air Space in Sq. Ft.		Net Air Space in Sq. Ft.		Net Air Space in Sq. Ft.	
10 11 12	190 209 228	13.03 14.31 15.60	54 59 65	11.04 12.17 13.27	50 55 60	9.37 10.30 11.25	46 51 55	10 11 12	75.0 82.5 90.0	6.82	52 57 62	7.29 8.02 8.74	56 61 67	5.25 5.77 6.30	48 53 57
12 13 14 15	247 266 285	16.90 18.19 19.49	70 75 81	14.35 15.46 16.58	65 70 75	12.18 13.11 14.06	55 60 65 69	13 14 15	97.5 105.0 112.5	8.06 8.68	62 67 72 77	9.47 10.19 10.91	67 72 77 83	6.82 7.35 7.87	48 53 57 62 67 71
16 17 18	304 323 342	20.78 22.07 23.34	86 91 97	17.70 18.78 19.88	80 85 90	14.99 15.92 16.86	69 74 79 83	16 17 18	120.0 127.5 135.0	9.92 10.54	82 87 92	11.64 12.36 13.09	88 93 99	8.40 8.92 9.45	76 81 85
19 20 21	361 380 399	24.64 25.95 27.25	102 108	21.00 22.10	95 100	17.80 18.73	88 92	$\frac{19}{20}$	142.5 150.0	11.78 12.40	97 102	13.82 14.54	104 110	9.97 10.50	90 94
22 23 24	418 437 456	28.52 29.80 31.10	113 118 124 129	23.20 24.31 25.40 26.50	105 110 115 120	19.67 20.60 21.54 22.47	97 102 106 111	21 22 23 24	157.5 165.0 172.5 180.0	13.64 14.26	107 112 117 122	15.26 15.98 16.71 17.43	115 120 126 131	11.02 11.55 12.07 12.60	99 104 108 113

CAST IRON HOT-BLAST VENTILATING RADIATORS

NARROW SECTION-RATINGS AND FREE AREAS

NARROW SECTION RATINGS AND FREE AREAS

Narrow 50" Section 9.5 sq. ft. Height, 50 11". Width, 614" Narrow 60" Section 11 sq. ft. Height, 60 14". Width, 614"

No.	Sq. Ft.		entres oops		Centres coops		entres.	No.	Sq. Ft	of L	entres oops		Centres loops		Centres Joops
of Loops in	of Heat- ing	St'nd.44	% of Face	52% (of Face	37%	of Face	111	ing	St'nd.44	of Face	52%	of Face	37% (of Face
Stack	Sur- face	Net Air Space in Sq. Ft.	†Width of Stack in Ins.			Net Air Space in Sq. Ft.		Stack	Sur- face	Net Air Space in Sq. Ft.	(Width Stack in in Ins.	Net Air Space in Sq. Ft.		Space in	(Width of Stack in Ins.
10	95.0	7.68	52	9.05	56	6.50	48	10	110.0	0.21	52	10 85	56	7.81	48
11	104.5	8.45	57	9.95	61	7.15	53	1.1	121 0	10 13	57	11 93	64	8 59	53 57
12	114.0	9.22	62	10.85	67	7.80	57	12	132.0	11.05	62	13 00	67	9.37	19.7
13	123.5	9.99	67	11.75	72	8.45	62	13	143 0	11 07	67	14 08	72	10 15	62
14	133.0	10.76	72	12.65	77	9.10	67	1-4	154.0		.72	15 15	77	10.93	337
15	142.5	11.53	77	13.55	83	9.75	71	15	165.0		77	16 23	83	11 71	71 76 81 85
16	152.0	12.30	82	14.45	88	10.40	76	16	176.0		8.2	17 31	88	12.49	76
17	161.5	13.07	87	15.35	93	11.05	81	17	187 0		8.7	18 30	963	13 27	81
18	171.0	13.84	92	16.25	99	11 70	85	18	198.0		9.2	19 46	99	14 05	85
19	180.5	14.59	97	17.15	104	12.35	90	1.9	209 0		97	20 54	104	14.83	90
20	190.0	15.36	102	18.05	110	13.00	Ω-4	20	220.0		102	21.62	1.10	15 61	94
21	199.5	16.13	107	18.95	115	13.65	99	21	231 0		107	22.70	115	16.30	.99
22 23	209.0	16.90	112	19.85	120	14.30	104	22	242.0		112	23.78	120	17 17	104
23	218.5	17.67	117	20.75	126	14.95	108	23	253 0		117	24 85	126	17 95	108
24	228.0	18.44	122	21.65	131	15,60	113	24	264 0	22 10	122	25.93	131	18 73	113

Approx. weights-Actual, 8.2 lbs. per sq. ft. Shipping, 9 lbs. per sq. ft

†Note-Add to the width of stack 212 inches for staggering of stacks-except 4-inch centres not staggered.



LOW-DRIP LEG

FOR STEAM



All Safford Steam Radiators are equipped with low-drip legs unless otherwise ordered; the centre of the 2" opening is thus ½" lower than the centre of the 2" nipple connection between the sections and it follows that no matter what size bushing is used Safford Steam Radiators are always tapped eccentric, thus ensuring the complete draining off of the water of condensation from Safford Steam Radiators.

SPECIAL RADIATORS

EMPRESS HUMIDIFYING TWO-COLUMN RADIATOR

QUEEN FOUR-COLUMN STEAMSHIP RADIATOR

DINING ROOM FOUR-COLUMN RADIATOR

LONG LEG RADIATORS

LEGLESS RADIATORS

EMPRESS HUMIDIFYING

TWO-COLUMN RADIATORS



SPECIAL RADIATORS

FOR STEAM OR WATER

SPECIAL RADIATORS FOR STEAM OR WATER

EMPRESS HUMIDIFYING TWO-COLUMN RADIATORS

This new Humidifying Radiator is a decided innovation and we feel sure will commend itself to all heating engineers. The highly nickel plated copper water pan is placed inside the radiator in such a position as to render it almost invisible, and at the same time to permit of the highest possible vaporization of the water.

The desirability of imparting moisture to the atmosphere of rooms heated by either steam or water, will appeal especially to those who desire perfect hygienic conditions, and the added efficiency of the radiating surface consequent upon the increased humidity makes this radiator a most valuable addition to the "Safford" line.

Made in SAXON, VICTORIA and REGINA two-column patterns.

For Capacities and Dimensions see Schedules pertaining to SAXON, VICTORIA and REGINA Radiators.



Nos. 1, 2, 3, 4 have connections at sides as shown above. Nos. 1A, 2A have connections on bottom of feet.

SPECIAL RADIATORS

QUEEN

FOUR-COLUMN STEAMSHIP RADIATOR— PLAIN OR ORNAMENTAL

This single section radiator has been specially designed for use in cabins of steamships.

Made in 16, 20, 26, 32 inch Favorite plain and ornamental patterns.

FOR STEAM OR WATER

CAPACITIES AND DIMENSIONS

No.	Height Inches	Square Feet	Tappings Inches	Width Inches	Depth Inches
1 1A	16 14½	234 234	1/2	81/2	4
2 2A	20½ 19	4 1/4	66 *	11	11
3 4	26½ 32½	5¾ 7		44	11

SPECIAL RADIATORS

DINING-ROOM

FOUR-COLUMN RADIATORS

FOR STEAM OR WATER

Ovens are 21 inches long by 12 inches wide. Made only in the four column 38½ inch Daisy ornamental pattern.

SIZES AND LIST PRICES

Size	No. of Loops in Radiator (Exclusive of Oven)	Sq. Ft. of Heating Surface	Equiva- lent 1" Pipe	Extreme Length Inches
AA	2	21	63	28
A	4	37	111	36
В	6	53	159	44
C	8	69	207	44 52
D	10	85	255	60
E	12	101	303	68
F	14	117	351	76

Size	Price	Price	Price
	Without	With	With
	Top	Plain Top	Plated Top
AA	\$48.31	\$50.25	\$52.35
B	53.83	55.50	58.20
	60.61	63.00	66.30
C	68.14	70.50	74.40
	74.25	78.00	82.50
E	80.95	85.50	90.00
	87.73	93.00	98.70



SPECIAL RADIATORS FOR STEAM OR WATER

LONG OR STORK LEG RADIATORS

	Per Leg Section
High Legs, 4 to 6 inches high, add	
High Legs, up to 9 inches high add	. 60
High Legs, up to 15 inches high, add	1.20
High Legs, 16 inches (and over) high, add	

Stork or long legs may be supplied on any of the direct radiators shown in this catalogue. The height of legs is stated as the height from the floor to the centre of tapping. These legs are made in any height from 4 inches up to the stork leg which is 18 inches from the floor to centre of tapping. Legs higher than 18 inches are made to special order only,

SPECIAL RADIATORS FOR STEAM OR WATER

LONG OR STORK LEG RADIATORS

Can also be made by using Jennison Adjustable Foot Rests or Safford Radiator Pedestals.

JENNISON ADJUSTABLE FOOT REST

This Foot Rest consists of two iron blocks that open by simply turning the top piece, which is so cast that any radiator foot will fit securely. A substantial screw holds the two pieces and allows the proper adjustment to be easily made.



Plain Iron, packed 48 in a box



Closed Open

7/8
11/4
13/4
13/4
21/4

Price 80.20 .25 .30

SAFFORD RADIATOR PEDESTALS



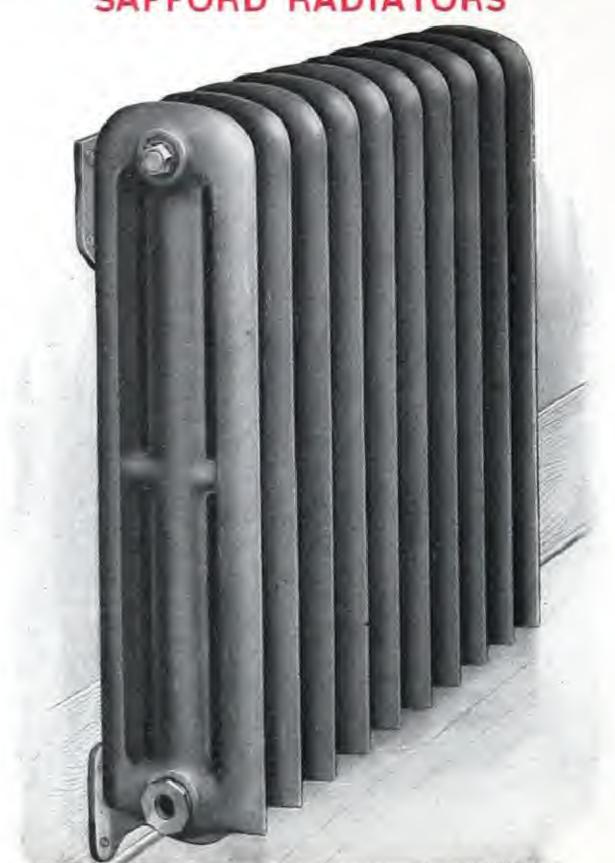
As shown in illustration, are made in varying heights and are designed to fit under the legs of all styles and heights of any of our radiators.

Height, inches	1/2	1	11/2	2	21/2	3	31/2	4	4 1/2	5
List Price	.10	.10	. 14	.20	. 20	.24	. 24	. 30	. 30	. 35

SAXON, VICTORIA REGINA

Made in

ONE, TWO, THREE and
FOUR-COLUMN



SPECIAL RADIATORS

FOR STEAM OR WATER

The illustration shows Saxon Three-Column Radiator hanging on Concealed Brackets.



CONCEALED BRACKETS FOR

ONE, TWO, THREE, FOUR-COLUMN LEGLESS RADIATORS

Saxon - Victoria - Regina

The type of radiator shown on the opposite page is very desirable for use in corridors or rooms where floor space is limited, or in basements where it is advantageous to hang the radiators on the walls above the water line in the boiler.

For supporting Single-Column, Two-Column, Three-Column and Four-Column Dierct Radiators of patterns made by us. Distance from wall to centre of tapping in Radiator is—in the Single-Column, 3¼ inches; Two-Column, 45% inches; Three-Column, 5¾ inches; Four-Column, 6½ inches. A set consists of one each, top and bottom support. Ordinarily two sets will support a medium size of Radiator.



Bottom Bracket

LIST PRICES

No. of Columns	1	2	3	4
Top	15c.	30c.	35c.	40c.
	20c.	35c.	40c.	50c.

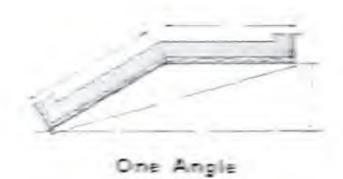
SPECIAL RADIATORS FOR STEAM OR WATER

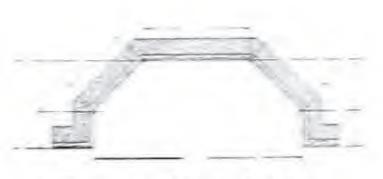
ONE, TWO, THREE, FOUR-COLUMN RADIATORS

Angle

Curved - Circular

Measurements required for Angle, Curved and Circular Radiators.

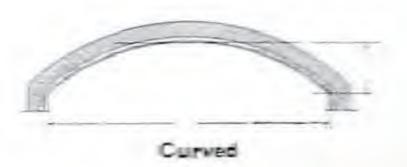




Three or More Angles



Two Angles





SPECIAL RADIATORS FOR STEAM OR WATER

ONE, TWO, THREE, FOUR, FIVE AND SIX-COLUMN RADIATORS

The sketches on the opposite page indicate the measurements which are required in order to secure angle and curved Radiators which will correctly fit the peculiar shape of the walls of rooms for which they are intended.

It is, of course, desirable that a wooden or heavy paper template should accompany orders, but if this is not convenient, the measurements along dimension lines shown, if accurately stated, will insure correct filling of orders. In furnishing sketches please state whether measurements have been taken from the plastered wall, or whether allowance has been made for baseboard and shoe. Sketches should show distinctly on which end the supply leg is to be placed. State whether single or twin connection tappings are desired.

Special Note—In ordering state whether templates are to be completely filled up with sections or otherwise. Show extreme points between which Radiator may be placed.

TAPPINGS FOR RADIATORS

Standard Tappings-Steam Radiators

All Safford Steam Radiators will be tapped as per schedule below. If any special tappings are desired they should be plainly stated on orders.

pings are desired they should be plainly stated on orders.	
One Pipe Steam Radiators, Direct and Direct-Indirect:— 25 square feet and under	
Two Pipe Steam Radiators, Direct and Direct-Indirect:— 50 square feet and under	
Two Pipe Steam Radiators, Indirect only:— 40 square feet and under	

Steam Indirect Radiators are always tapped for two pipe system.

All radiators shipped from Winnipeg Branch are tapped right hand unless otherwise ordered.

Note.—When using union valves or union elbows please state this fact in ordering so that connections may be tapped right hand.

TAPPINGS FOR RADIATORS

Standard Tappings Water Radiators

All Safford Water Radiators will be tapped as per schedule below. If any special tappings are desired they should be plainly stated on orders.

All Twin Connection Radiators are tapped left hand. All Single Connection or opposite end tappings will be made with right hand threads. All Water Radiators are shipped twin connection tapped left hand unless otherwise specified on orders.

All Wall Radiators for hot water are tapped top and bottom same end left hand, and will be shipped accordingly unless otherwise specified on orders. Wall Radiator sections are tapped 11/2 inch left hand and are bushed to sizes required.

All radiators shipped from Winnipeg Branch are tapped right hand unless otherwise

ordered.

Note.—When using union valves or union elbows please state this fact in ordering, so that connections may be tapped right hand.

Heat Generator

FIRST FLOOR-Up to 25 square feet	Lax La inch
From 25 square feet to 60 sc Over 60 square feet	puare feet 3 x 3 x
SECOND FLOOR-Up to 30 square feet. From 30 square feet to 100 Over 100 square feet	square feet
THIRD FLOOR-Up to 50 square feet	square feet 12x 12 inch

TAPPINGS FOR RADIATORS

For Special Steam Systems

DUNHAM VACUO-VAPOR SYSTEM

Radiator Tappings, Dunham Vapor and Vacuum systems using Hot Water radiation with top inlet and bottom outlet opposite end.

Square Feet Radiation	Inlet	Outlet
1 to 40	½ inch	½ inch
41 to 100	3/4 "	1/2 "
101 to 180	1 "	1/2 "
m : 1 1 1 6 1 6 1		

Tappings right or left as specified.

DUNHAM VACUUM SYSTEM

Radiator Tappings, Dunham Vacuum System, using Steam Radiation, Bottom Connection, opposite ends.

Square Feet Radiation	Inlet	Outlet
1 to 25	½ inch	½ inch
26 to 80	34 **	1/2 "
81 to 150	1 "	1/2 "
151 to 250	11/4 "	1/2 "
251 to 350	11/2 "	1/2 "
Tappings right or left as specified.		

TAPPINGS FOR RADIATORS

For Special Steam Systems

Webster Modulation System (Hot Water Type Radiator only used)

Direct Radiators	Direct-Indirect Radiators
Supply End	Supply End
Up to 50 sq. ft	Up to 16 sq. ft

All tappings are Right Hand. Flows at top and returns at bottom opposite end. Returns tapped eccentric. No air vent tapping.

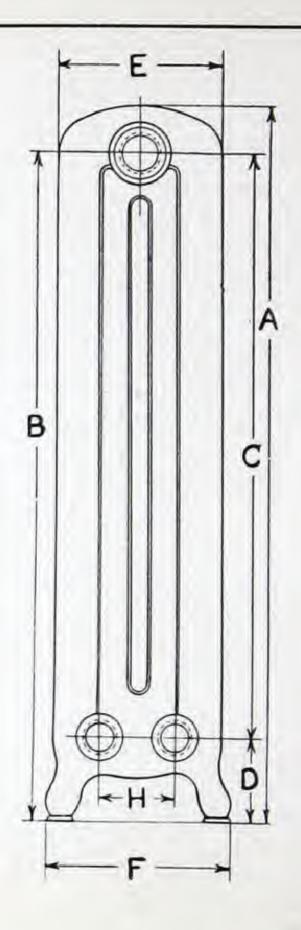
Webster Vacuum System (Steam Type Radiators)

		Heating Surface	Inlet	Outlet
35 sq. ftan	d unde	2 	1/2"	12"
36 sq. ft	to	80 sq. ft	34"	1/2"
81 sq. ft	to	150 sq. ft	1''	1/2"
151 sq. ft	to	300 sq. ft	114"	34"
301 sq. ft	to	450 sq. ft	11/2"	3/4"
451 sq. ft	to	600 sq. ft	2"	1''
601 sq. ft	to	1,200 sq. ft	21/2"	1''

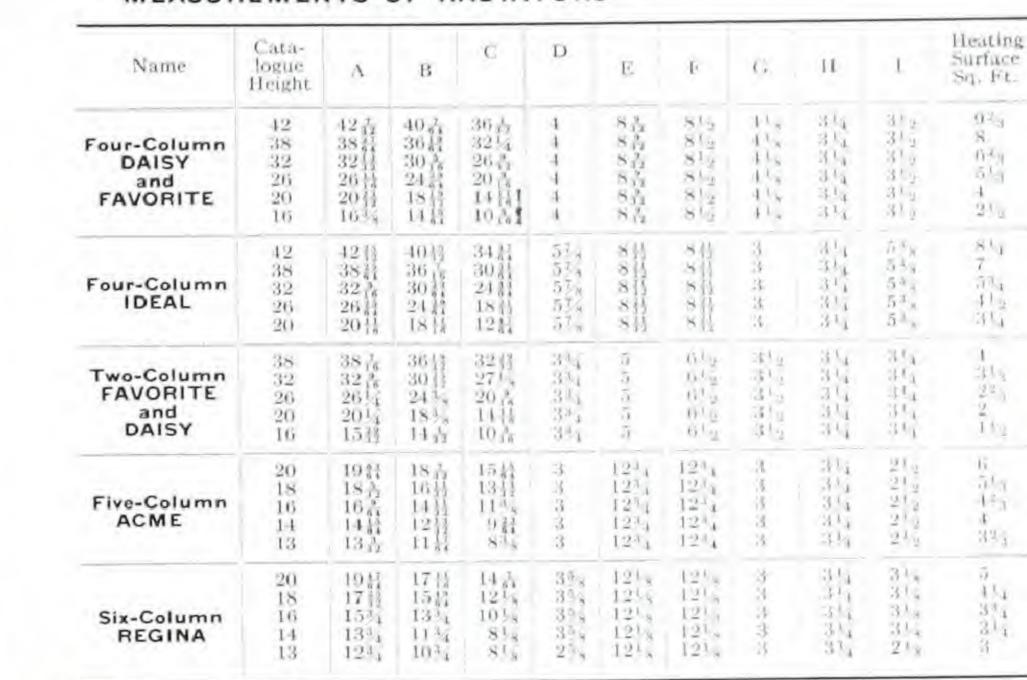
All returns tapped Right Hand eccentric. No air vent tapping (if tapped to be plugged). Flows tapped right or left hand thread as specified.

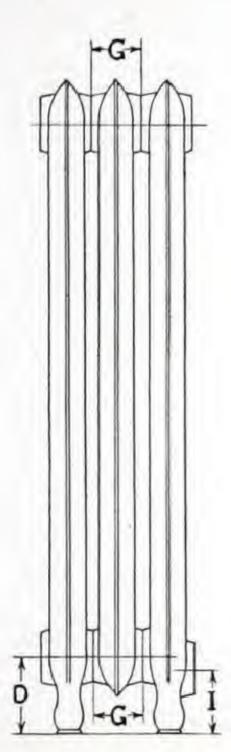
MEASUREMENTS OF RADIATORS

Name	Cata- logue Height	A	В	С	D	E	F	G	Н	I	Heating Surface Sq. Ft.
One Column SAXON VICTORIA and REGINA	38 32 26 23 20	$\begin{array}{c} 38\frac{3}{16} \\ 32\frac{15}{32} \\ 26\frac{1}{2} \\ 23\frac{3}{16} \\ 20\frac{3}{16} \end{array}$	$\begin{array}{c} 36\frac{7}{16} \\ 30\frac{1}{2} \\ 24\frac{9}{16} \\ 21\frac{3}{32} \\ 18\frac{9}{32} \end{array}$	$31\frac{15}{16} \\ 25\frac{15}{16} \\ 20\frac{1}{16} \\ 16\frac{19}{32} \\ 13\frac{49}{64}$	$4\frac{1}{2}$ $4\frac{1}{2}$ $4\frac{1}{2}$ $4\frac{1}{2}$ $4\frac{1}{2}$ $4\frac{1}{2}$	$\begin{array}{c} 4 \frac{3}{16} \\ 4 \frac{3}{16} \\ 4 \frac{3}{16} \\ 4 \frac{3}{16} \\ 4 \frac{3}{16} \end{array}$	51/4 51/4 51/4 51/4	2½ 2½ 2½ 2½ 2½ 2½		4 4 4 4 4	3 2½ 2 1¾ 1½
Two-Column SAXON VICTORIA and REGINA	45 38 32 30 26 23 20	$\begin{array}{c} 44\frac{15}{16} \\ 38\frac{13}{32} \\ 32\frac{15}{32} \\ 30\frac{1}{32} \\ 26\frac{9}{16} \\ 23\frac{1}{32} \\ 20\frac{3}{32} \end{array}$	$\begin{array}{r} 43\frac{1}{32} \\ 36\frac{9}{16} \\ 30\frac{5}{8} \\ 28\frac{5}{32} \\ 24\frac{21}{32} \\ 21\frac{5}{32} \\ 18\frac{5}{32} \end{array}$	$39\frac{3}{16}$ $32\frac{5}{8}$ $26\frac{5}{8}$ $24\frac{7}{32}$ $20\frac{43}{64}$ $17\frac{19}{64}$ $14\frac{15}{64}$	4 4 4 4 4 4	73/8 73/8 73/8 73/8 73/8 73/8 73/8	81/4 81/4 81/4 81/4 81/4 81/4 81/4	2½ 2½ 2½ 2½ 2½ 2½ 2½ 2½	31/4 31/4 31/4 31/4 31/4 31/4 31/4	3½ 3½ 3½ 3½ 3½ 3½ 3½ 3½ 3½	5 4 3 ¹ / ₃ 3 2 ² / ₃ 2 ¹ / ₃ 2
Three-Column SAXON VICTORIA and REGINA	44 38 32 26 22 18	$\begin{array}{r} 43_{16}^{13} \\ 38_{32}^{13} \\ 32_{32}^{15} \\ 26_{16}^{11} \\ 22_{32}^{19} \\ 18_{32}^{21} \end{array}$	$\begin{array}{c} 41\frac{1}{8} \\ 35\frac{11}{16} \\ 29\frac{27}{32} \\ 23\frac{15}{16} \\ 19\frac{7}{8} \\ 15\frac{29}{32} \end{array}$	$\begin{array}{c} 36\frac{23}{32} \\ 31\frac{1}{4} \\ 25\frac{7}{16} \\ 19\frac{9}{16} \\ 15\frac{17}{32} \\ 11\frac{1}{2} \end{array}$	$4\frac{1}{2}$ $4\frac{1}{2}$ $4\frac{1}{2}$ $4\frac{1}{2}$ $4\frac{1}{2}$ $4\frac{1}{2}$ $4\frac{1}{2}$	9 9 9 9 9	91/4 91/4 91/4 91/4 91/4 91/4	2½ 2½ 2½ 2½ 2½ 2½ 2½ 2½	31/4 31/4 31/4 31/4 31/4 31/4	4 4 4 4 4 4	6 5 4½ 3¾ 3 2¼
Four-Column SAXON VICTORIA and REGINA	45 38 32 26 22 20 18	46 $38\frac{1}{2}$ $32\frac{1}{2}$ $26\frac{1}{2}$ $22\frac{1}{2}$ $20\frac{1}{2}$ $18\frac{1}{2}$	$\begin{array}{r} 43\frac{13}{16} \\ 36\frac{1}{2} \\ 30\frac{1}{2} \\ 24\frac{1}{2} \\ 20\frac{1}{2} \\ 18\frac{1}{2} \\ 16\frac{1}{2} \end{array}$	$ \begin{array}{r} 39\frac{5}{16} \\ 32 \\ 26 \\ 20 \\ 16 \\ 14 \\ 12 \end{array} $	4 ½ 4 ½ 4 ½ 4 ½ 4 ½ 4 ½ 4 ½ 4 ½ 4 ½	11½ 11½ 11½ 11½ 11½ 11½ 11½ 11½	11 3/4 11 3/4 11 3/4 11 3/4 11 3/4 11 3/4 11 3/4	3 3 3 3 3 3 3 3	31/4 31/4 31/4 31/4 31/4 31/4 31/4	4 4 4 4 4 4 4	10 8 6½ 5 4 3½ 3



MEASUREMENTS OF RADIATORS





INFORMATION REQUIRED FOR ORDERING RADIATORS AND RADIATOR REPAIRS

State plainly the Catalogue name. Especially mention the height of radiator required and where steam state whether it is one pipe or two pipe, plain or ornamental, round or square top, standard or long legs, and where for a vacuum system, state plainly whether the tappings are right or left and the sizes thereof.

When ordering radiator leg sections, give full particulars as to Catalogue name, whether plain or ornamental, square or round top, height whether for feed or return end, one pipe or two pipe steam, where tapping is to be located, whether same is right and left, and the size of it. Also the size of the inside connection of the section and whether it is right or left. State whether it is a water section used for steam having nipple connections top and bottom or if connection is only at bottom.

Where ordering steam sections for the centre of a radiator, state whether it is a centre leg or ordinary centre section, and all other particulars asked for above.

Where ordering sections for repairs of hot water radiators, give all particulars asked for above, and further whether tapped for twin or single connection, and whether tapping is right or left, and the size of same.

For convenience in handling radiators, it is well not to order radiators having more than 25 sections in one, two and three column, and 15 sections in four column. Where radiators are required larger than this, it will be better to ship them in two parts.

When ordering curved, angle or circular radiators, kindly refer to page 196, and give all dimensions clearly.

When ordering repairs for radiators, send order direct to the office or branch from which the radiation was purchased and if possible send number and date of invoice referring to same.

WROUGHT IRON AND STEEL PIPE RADIATOR AIR VALVES RADIATOR VALVES BRASS GLOBE, ANGLE AND CHECK VALVES STEAM COCKS IRON BODY VALVES LONG SWEEP FITTINGS CAST IRON FITTINGS MALLEABLE IRON FITTINGS HOOK PLATES, PIPE HANGERS

UNIONS, FLANGE UNIONS BRANCH TEES WROUGHT IRON NIPPLES FLOOR AND CEILING PLATES EXPANSION TANKS, WATER GAUGES SECTIONAL PIPE COVERINGS, ASBESTOS HAIR FELT, COMPANION FLANGES STEAM TRAPS, REGISTERS FUSIBLE PLUGS, SAFETY VALVES GAUGES, EXPANSION JOINTS BACK PRESSURE VALVES, ETC., ETC.

THE



St. John

Montreal

Hamilton TORONTO

Winnipeg Calgary

Vancouver

IRON PIPE

TABLE OF STANDARD DIMENSIONS AND LISTS Merchants' Wrought Steam, Gas and Water Pipe

				141	erchants	wrough	it Steam	i, das a	no wate	er ripe					
Nominal Inside Diam-	Price per	Circum	Circumference		Actual Diameter Inches		Inter- nal	l ness	Con- tained Pounds of Water	Surface	Weight	to	per Inch		Approx No. of Feet
eter Inches	Foot Black	External Inches	Internal Inches	Inside	Outside	Outside Surface Feet	Area Inches	Inches	per Lineal Foot	per Ft. in Length	per Ft. Pounds	Thread Inches	of Screw	Drill	in a Bundl
1/8 1/4 3/8 1/2 3/4 1 11/4 11/2 2 21/2 3 31/2 4 41/2 5 6 7 8 Light 8 Stn'd 9 10 Light 10 Med. 10 Stn'd 11 12 Light 12 Stn'd	$.05\frac{1}{2}$ $.06$ $.08\frac{1}{2}$ $.11\frac{1}{2}$ $.17$ $.23$ $.27\frac{1}{2}$ $.37$ $.58\frac{1}{2}$ $.76\frac{1}{2}$ $.92$ 1.09 1.27 1.48 1.92 2.38 2.50 2.88 3.45 3.20 3.50 4.12 4.63 4.50 5.07	1.69 2.12 2.63 3.29 4.13 5.21 5.96 7.46 9.03	$\begin{array}{c} .84 \\ 1.14 \\ 1.55 \\ 1.95 \\ 2.58 \\ 3.29 \\ 4.33 \\ 5.06 \\ 6.49 \\ 7.75 \\ 9.63 \\ 11.14 \\ 12.64 \\ 14.16 \\ 15.84 \\ 19.05 \\ 22.06 \\ 25.35 \\ 25.07 \\ 28.07 \\ 32.019 \\ 31.84 \\ 31.47 \\ 34.55 \\ 37.98 \\ 37.7 \\ \end{array}$	27 .36 .49 .62 .82 1.05 1.38 1.61 2.07 2.47 3.55 4.03 4.51 5.04 6.06 7.02 8.071 7.98 8.94 10.19 10.136 10.02 11. 12.09 12.09	$\begin{array}{c} .4\\ .54\\ .67\\ .84\\ 1.05\\ 1.31\\ 1.66\\ 1.9\\ 2.37\\ 2.87\\ 3.5\\ 4.\\ 4.5\\ 5.56\\ 6.62\\ 7.62\\ 8.62\\ 9.62\\ 10.75\\ 10.75\\ 10.75\\ 10.75\\ 12.75\\ 12.75\\ 12.75\\ \end{array}$	9.44 7.075 5.657 4.547 3.637 2.903 2.301 2.01 1.608 1.328 1.091 0.955 0.849 0.764 0.687 0.577 0.501 0.443 0.443 0.355 0.355 0.355 0.325 0.299 0.299	0.05 0.10 0.19 0.30 0.53 0.86 1.49 2.03 3.35 4.78 7.38 9.88 12.73 15.96 19.99 28.88 38.73 51.16 50.03 62.73 81.58 80.69 78.83 95.03 114.80 113.09	.068 $.088$ $.091$ $.109$ $.113$ $.134$ $.140$ $.145$ $.154$ $.204$ $.217$ $.226$ $.237$ $.246$ $.259$ $.280$ $.301$ $.277$ $.322$ $.344$ $.279$ $.307$ $.366$ $.375$ $.330$ $.375$.024 .044 .082 .132 .23 .373 .648 .883 1.454 2.072 3.202 4.285 5.517 6.908 8.668 12.521 16.79 	$egin{array}{c} 0.106 \\ 0.141 \\ 0.177 \\ 0.220 \\ 0.275 \\ 0.344 \\ 0.497 \\ 0.621 \\ 0.753 \\ 0.916 \\ 1.047 \\ 1.178 \\ 1.309 \\ 1.456 \\ 1.734 \\ 1.996 \\ 2.256 \\ 2.256 \\ 2.256 \\ 2.256 \\ 2.814 \\ 2.814 \\ 2.814 \\ 2.814 \\ 3.076 \\ 3.338 \\ 3.338 \\ 3.338 \\ 3.338 \\ \end{array}$	0.24 0.42 0.56 0.85 1.13 1.67 2.27 2.71 3.65 5.79 7.57 9.10 10.79 12.53 14.61 18.97 23.54 24.69 28.55 33.90 31.20 34.24 40.48 45.55 43.77 49.56	\$\frac{9}{32}\$\frac{3}{16}\$\frac{9}{16}\$\frac{1}{2}\$\frac{1}{16}\$\frac{1}{16}\$\frac{1}{16}\$\frac{1}{2}\$\frac{1}{16}\$\frac{1}{2}\$\frac{1}{16}\$\frac{1}{2}\$\frac{1}{16}\$\frac{1}{2}\$\frac{1}{16}\$\frac{1}{2}\$\frac{1}{16}\$\frac{1}{2}\$\frac{1}{16}\$\frac{1}{2}\$\frac{1}{16}\$\frac{1}{2}\$\frac{1}{16}\$\frac{1}{2}\$\frac{1}{16}\$\frac{1}{2}\$\frac{1}{16}\$\frac{1}{2}\$	27 18 18 14 11 11 11 12 11 12 11 12 11 12 11 8 8 8 8	$\begin{array}{c} 264948232231636323223163632323163644561446615165651656651656616516516516516516516$	370 260 220 100 60 60 80 80 80 80 80 80 80 80 80 80 80 80 80

IRON PIPE

		Extra Stro	ng			Double Extra Strong								
Size Inches	Price per Foot	Actual Outside Diameter	Nominal Inside Diameter	NominalWt- per Foot Pounds	Size Inches	Price per Foot	Actual Outside Diameter	Nominal Inside Diameter	Nominal Winger Foot Pounds					
18 14 14 114 114 114 114 114 114	\$0.11 .11 .12 .15 .22 .30 .36 .50 .81 1.05 1.33 1.50 1.95 2.16 2.90 3.80 4.30	.405 .540 .675 .840 1.05 1.315 1.66 1.900 2.375 2.875 3.500 4.000 4.500 5.000 5.563 6.625 7.625 8.625	.205 .294 .421 .542 .736 .951 1.272 1.494 1.933 2.315 2.892 3.358 3.818 4.280 4.813 5.750 6.625 7.625	. 29 . 54 . 74 1. 09 1. 39 2. 17 3. 00 3. 63 5. 02 7. 67 10. 25 12. 47 14. 97 18. 22 20. 54 28. 58 37. 67 43. 00	34 1 14 11/2 2 21/2 3 31/2 4 41/2 5 6 7 8	\$0.25 .30 .37 .52 .65 .95 1.37 1.92 2.45 2.85 3.30 3.80 5.30 6.25 7.20	.84 1.05 1.315 1.66 1.90 2.375 2.875 3.50 4.00 4.50 5.00 5.563 6.625 7.625 8.625	.244 .422 .587 .885 1.088 1.491 1.755 2.284 2.716 3.136 3.564 4.063 4.875 5.875 6.875	1.70 2.44 3.65 5.20 6.40 9.02 13.68 18.56 22.75 27.48 32.53 38.12 53.11 62.38 71.62					

Extra strong and double extra strong pipe is always shipped without threads or couplings unless otherwise ordered.

Temp. at which pipe is fitted					ought IRO			
0° 32° 62° 75°	160° 100′ 1.28″ 100′ 1.02″ 100′ 0.8″ 100′ 0.7″ Hot	180° 100′ 1.44″ 100′ 1.18″ 100′ 1.″ 100′ 0.8 6″ Water	212° 100′ 1.69″ 100′ 1.43″ 100′ 1.22″ 100′ 1.12″	220° 100′ 1.79″ 100′ 1.53″ 100′ 1.29″ 100′ 1.18″ Steam	230° 100′ 1.88″ 100′ 1.62″ 100′ 1.37″ 100′ 1.26″ at approxim	240° 100′ 1.92″ 100′ 1.66″ 100′ 1.45″ 100′ 1.35″ ately	250° 100′ 2.00′′ 100′ 1.74′′ 100′ 1.53′′ 100′ 1.43′′	260° 100′ 2.12″ 100′ 1.86″ 100′ 1.62″ 100′ 1.51″
			Atmosphere	2 lb. press.	5 lb. press.	10 lb, press	15 lb. press	20 lb press

Care must be taken to allow for free expansion of all mains and risers.

IRON PIPE

CUTTING AND SCREWING PIPE EXTRA

Size	1/4	3/8	1/2	3/4	1	11/4	11/2	2	21/2	3	31/2	4	41/2	5	6	7	8	9	10	12
Cut—Price each	\$0.06	\$0.06	0.06	80.068	0.06	\$0.08	\$0.10	\$0.14	\$0.20	\$0.30	\$0.40	\$0.40	\$0.50	80.60	\$0.80	\$1.00	\$1.20	\$2.00	\$2.50	\$3.50
Thread-Price each	.06	.06	.06	.06	.06	.08	.10	.14	.20	.30	.40	.40	.50	. 60	,80	1.00	1.20	2.00	2.50	3.50

CUTTING TO LENGTHS EXTRA

Inch	6 ft. and longer		2 ft. and under 6 ft.		1 ft. and under 2 ft.	
	Black	Galvanized	Black	Galvanized	Black	Galvanized
$\frac{1}{4}$	\$0.50	\$0.66	\$0.66	\$0.83	\$0.83	\$1.00 per 100 ft
	.50	.66	.66	.83	.83	1.00 "
	60	.77	.77	1.02	1.02	1.30 "
	.68	.81	.81	1.15	1.15	1.50 "
	.83	1.15	1.15	1.65	1.65	2.15 "
	1.13	1.58	1.58	2.25	2.25	2.95 "
	1.35	1.89	1.89	2.70	2.70	3.50 "
	1.80	2.52	2.52	3.60	3.60	4.70 "
2½	2.85	3.99	3.99	5.70	5.70	7.40 "
	3.70	5.18	5.18	7.40	7.40	9.60 "
	5.20	7.28	7.28	10.40	10.40	13.50 "
	5.95	8.30	8.30	11.90	11.90	15.50 "

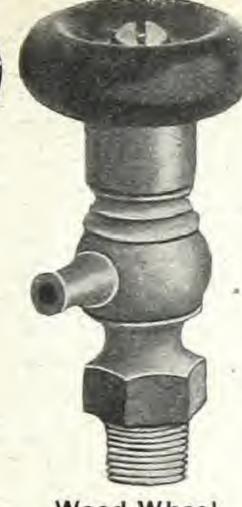
Discounts allowed off above prices.

Pieces under one foot sold on the Nipple List.

HOT WATER RADIATOR AIR VALVES



Wood Wheel Compression Air Valve



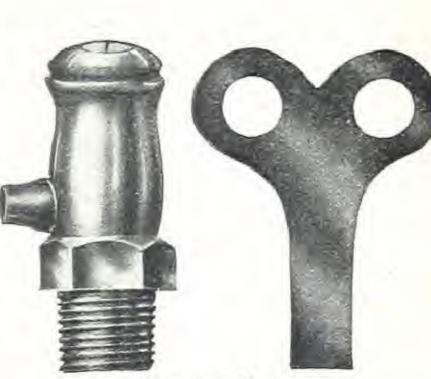
Wood Wheel Self-Closing Air Valve



Wood Wheel Positive Air Valve



Metal Midget Air Valve



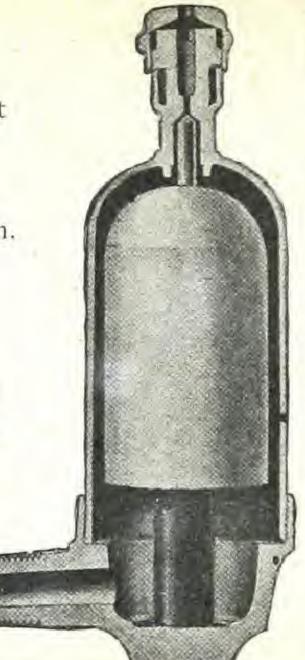
Improved Key Air Valve including 3 keys

LIST PRICES

	Compr	ression	Self-Closing	Positive	Midget	Improved
Per Dozen	Wood Wheel	Metal Wheel	Wood Wheel	Wood Wheel	All Metal	With 3 Keys
	\$2.50	\$3.50	\$10.00	\$3.00	\$7.50	\$2.50

AUTOMATIC AIR VALVES

Heavy Expansion Post of Carbon reinforced at top and bottom. Shell firmly threaded in Base. Cut 3/4 actual size. Valve is finely finished, adjustable and fully guaranteed.

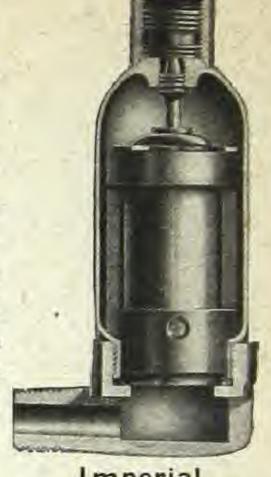


D. R. Co. No. 2

List price, dozen, \$10.50.



Specially adapted for Schools, Hospitals and Public Buildings. This Valve is similar in construction to the D. R. Co. No. 2 Automatic Air Valve, and in addition has a Special Lock Shield attach-



Imperial No. 2 Automatic

List price, dozen \$16.25 Float cannot become dislocated. Adjustable Water Seal keeps valve free from condensation. Constructed entirely of metal, fully nickeled. Sensitive exposed cylinder.

No. 03 Automatic (Similar to above, but with Lock Shield) List price, dozen\$25.00

THE DUNHAM AIR LINE VALVES

A strictly high grade Air Valve with hollow corrugated, thermostatic disc, for use on steam systems of the one or two-pipe gravity type.

These valves have large capacity for handling air, are automatic and require no adjusting for different steam pressures.

They relieve the radiators of air so easily that circulation is effected on minimum steam pressure.

Applicable only where air line returns are used.

Can be used with or without Exhauster or Vacuum Pump.

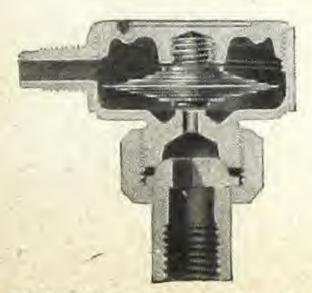
1/8" x 1/4" size Dunham Air Valve, nickel plated, list, \$4.00 each.

No. 2 National Paul

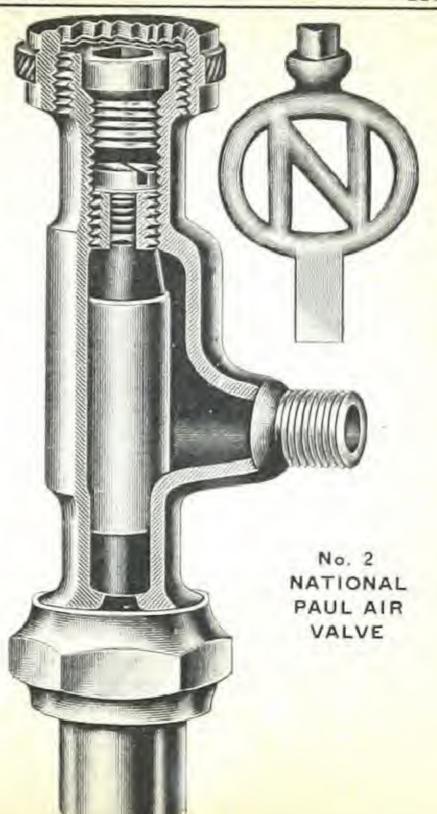
Especially adapted for Air Lines on Vacuum Heating Systems.

List price, dozen, \$30.00





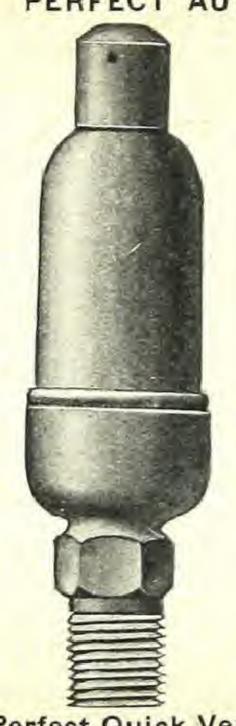
DUNHAM AIR LINE VALVE



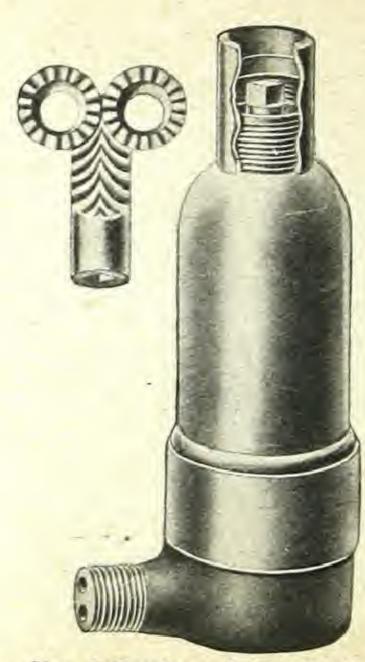
PERFECT AUTOMATIC AIR VALVES



No. 1 Perfect List price, dozen, \$22.50



No. 3 Perfect Quick Venting No. 5 Perfect Lock Shield Dozen, \$22.50



Dozen, \$30.00



Vacuum Valve Dozen, \$40.00

STEAM

MOGUL

Non-Adjustable Automatic Air Valve

With or Without Siphon

Guaranteed for Five Years

No adjustable parts, thus the efficiency is not interfered with.

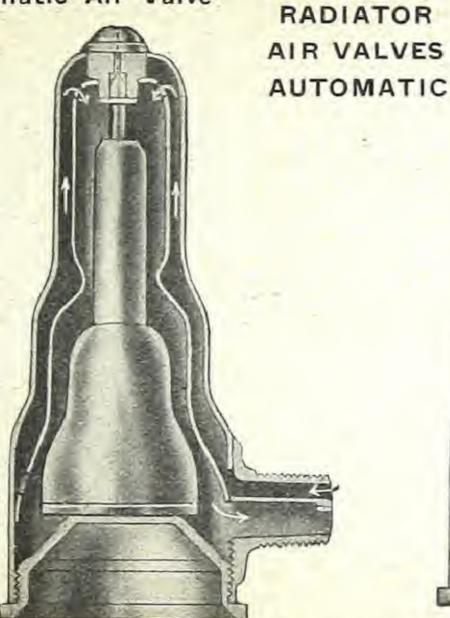
Positive in action, maintaining perfect control, rendering all loops in the radiator equally efficient.

Heavy and durable.

Specially valuable in public buildings or on any radiator liable to be disturbed.

No parts to become lost in handling.

All parts accessible and easily cleaned.



Mogul Non-adjustable List price, dozen, \$30.00

MOGUL Siphon Air and Vacuum Valve

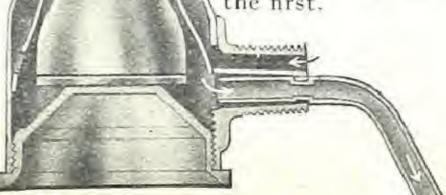
Non-Adjustable Guaranteed for Five Years

Automatic and mechanically perfect.

All parts accessible and easily cleaned.

This Valve is extremely sensitive against leakage of steam or water or the return of air. It will operate on a fraction of an ounce, discharging the air and preventing its return to the system.

It will maintain the efficiency of every section of the radiator—the last as well as the first.



Mogul Vacuum List price, dozen, \$45.00

STEAM AND HOT WATER RADIATOR VALVES

RADIATOR VALVES, BRASS

		Size		1/2	3/4	1	11/4	136	- 2
N.P. Quic	k Openin	ig, Angle w	ithout union	\$1.95	\$1.95	\$2.65	\$3.70	\$5.00	\$7.75
16 46	11	with ur	ion	2.40	2.85	3.65	5.05	7.10	10.85
14 11	11 5	straightway	, without union		****	3.70	5.00	7.10	10.85
		.,	with union	****		4.70	6.35	9.10	13.95
sen, Jenk	ins and .	lenkins Dis	sc N. P. Mountings,		1000				
14.	44	12	without union	2.30	2.80	3.50	4.80	6.55	10.80
	**	**	N. P. Mountings,		Luida I	- 3.50	E Man		The View
	**	14	with union	3.05	3.80	4.60	6.15	8.05	12.90
-	**		N. P. all over,	0.40	0.00				30.00
44.	44	116	without union	2.40	2.90	3.60	4.90	6.65	10.90
			N. P. all over.	0 15	0.00		0.05	2 22	40.00
140	44	>	with union	3.15	3.90	4.70	6.25	8.15	13.00
			W.W.N.P. Globe,	2.40	9.00	2 00	4.00	0.00	10.00
Detroit Do	chlose T	also with	without union	3.15	2.90	3.60	4.90	6.65	10.90
Jetroit 1 a	CKIESS V	dive, with	union,	2.30	3.80	4.75	6.40	8.10	13.10
		11.70.77	out union		2.85	3.65	4.90	6.75	11.00
V. F. Gall	. W. W.	without u	nion	2.00	2.60	3.45	4.70	6.35	9.80
P Cou	's Dotto	rn Polisha	d and N. P. all over,	3.10	3.75	4.65	6.10	7.85	12.10
Flhon	Cate V	alves with	out union	1	4 75	E 00	775	0.05	10 70
EIDON	Gate v	aives, with	union	****	4.75	5.90	7.15	8.95	12.70
P Gov		YY 1 C 1 1	Body and N. P. all	****	5.75	7.00	8 50	9.95	14.80
			, without union		3.90	4.75	5.85	7.20	10.35
P Gov	't Patte	n Rough	Body and N. P. all	****	0.50	4.70	0.00	1-20	10.00
over.	Elbow G	ate Valves	with union	2122	4.90	5.85	7.10	8.70	12.45
V. P. Rad	iator Ell	lows with	union	1.75	2.00	2.50	3.20	4.00	7.00
Detroit "A	Aulti-Po	rt" Valve	with union		4.50	1 - 1	7.00		7.00
			N P. trimmings	2.55	3 05	3.80	5.30	7,30	11.85
11	1.1	41	" all over	2.65	3.15	3.90	5 40	7.40	11.95
45.	" Fin	ished and	11	3.15	3.65	4.65	6 15	8.40	13.35
or, Valve	and the second second		h Body, N P.Trim'gs	3.35	4.15	5.05	6.85	8.85	14.15
	11	"	all over	3.45	4.25	5.15	6.95	8.95	14.25
4.6	3.90	" Finish		3.90	4.80	5.70	7.45	10.05	15.65

When ordering corner valves, please state whether RIGHT or LEFT HAND valves are required.

STANDARD BRASS VALVES, BRASS AND IRON COCKS

Sizes	1/4	3/8	3/2	34	1	134	114	2	21/2	3	314	4
Standard Globe	80.72	80.77	\$1.00	\$1.26	31.80	\$2.52	\$3_50	\$5 30	\$10.00	\$14.40	826 50	\$36.00
" Angle	.72			1.26	1.80	2.52	3.50	5.30	10.00	14.40	26.50	36.00
reet	1	1.45	1.65	2.05	2.80	3.70	5.00	7.30	411243		le ser	le ka a a k
Weber Gate	1.45		1.65 1.65	2.05	2.80	3.70	5 00		13.00	19.00		
Jenkins Type K Gate Flanged	A COLUMN TO SERVE	W (W)	1-00	9.00	2.80	12.00	5.00 15.00	7 30	13.00	19,00		PERMI
Jenkins or D. R. Globe	1 10	1.25	1.60	2.20	2.80	4.00	5.50	25.00 8.75	A POLY - APRIL	39 00		
Jenkins or D. R. Angles	1.10		1.60	2.20	2.80	4.00	5.50	8.75	Sec. 10. 10. 10. 10. 10. 10. 10. 10. 10. 10	22.00		12/11/
Standard Horizontal Check	65		.90	1.15	1.60	2.25	3.15	4.75				32.50
Standard Vertical & Angle Check	72	.77	1.00	1.26	1.80	2.52	3.50		740 0 0 0 0 0 0 0 0			
Swing Check		1.80	2.00	2.25	2.80	3.65	4.75	6.75	15.00	24.00		15102
Jenkins or D. R. Check.	THE REAL PROPERTY.	1,20	1.30	1.90	2.60	3.60	5.00	7.50	13.50			
Expansion Joints, Brass	0.0	1-1-22	1.50	2.20	2.75	4 00	5.00	8.00			V 3.4.3 . 4	
Steam Cocks, Sq. Head, Brass	-99	2.10	1.25 2.50	1,70	2.35	3.70	4.80	7.30			38.50	
" Iron	21 - 41 - 48	2.10	.90	3.00	3.75	5.75 1.60	1.95	$\frac{11.00}{2.70}$	B 046 F 761		A 100 - 100 to	a seman
" with brs. washer		2.5.5.5.5	1.00	1.20	1.55	1.95	2.35	3.20	W 1 W 100 1		0.5 1 10 0	E 20 - 2 20 - 3
brass plug		10011	1.30	1.60	1.90	2.65	3.75	5.25			2000	20.0
three-way			1000	1.65	1.80	2.05	2.65	3.65			14 00	
" with brs. washer		Lerrer		1.80	2.05	2.40	3.05	4.15				22.50
Bet Cook T. H. W. brass plug	24	******		2.20			4.50	6.25	9.75	13.75	30 or	40 00
Pet Cocks, T Handle	40 .45	. 50	.60	*****	******		17.517	40 (21)		-22511	20224	
Pet Cocks, L Handle	.00	. 65	4 . 4									
Rough Stop Cocks, T Handle, per doz		20.40	21.00	36,00	59.80		((811)		CONTRA	0.8000	THEFT	177-1
Rough Stop Waste Cocks, T handle, per doz		21 00	21 60	36 60	54 00	* # (T F	. (0.00	70700
Rough Stop Waste Cocks, L Handle, per doz		21.00	21.60	36.60	54.00				1-11-4			
Foot Valves, Standard, Scd., Iron.	A STATE OF THE	19-2-1	4.00	1 15	1.30	1 40	1 90	2.40	3.30	3.90	5.60	
Foot Valves, Standard, Flg'd	0. 0.00.00							3.50			The same of	
Foot Valves, Galvanized, Scd				1.75	2.00	2.10		3.60	5.00			
Discs for Jenkins Valves	06 .06	.08	.08	.10	12	.18	. 24	. 36				

STANDARD IRON BODY VALVES

Sizes	11/4	11/2	2	21/2	3	31/2	4	41/2	5	6	7	8	10	12
Globe & Ang. Val. without Y'ke Scd., ea			\$ 5.40	£ 7.35	\$ 9.80									
" without Y'ke Flg'd, "			7.00	9.00	12.50									
" with Y'keScd., "			7.00	9.00	12.50	15.25	19.00	24.00	27.00	37.50	63.00	72.00	114.00	170.0
" with Y'keFlg'd "			8.60	10.75	15.00	18.50	22.50	27.50	31.00	42.00	68.00	77.00	123.00	187.0
		11114		11.00										*****
				13.00									*****	
with Y'ke Scd., "							24,00							
with Y'ke Flg'd, "		F4.F5.E					26.00							
Horizontal Check Valves Scd., "			3.60				14.25							
Angle Check ValvesScd., "	1000						14.25							
Iorizontal Check Valves		****	5.25				18.00							
ingle Check Valves			5.25				18.00							
ertical Check ValvesScd.,	30123			9.50	12.50	17.00	21.00	30.00	33.00	40.00	62.00	73.00	125.00	13.54
Vertical Check Valves	*****		8.75	11,50	15.00	20.00	25.00	33.50	37.00	45.00	67.00	78.00	135.00	
ross Safety Valves	5.00	5.80	7.80	13.25	17.25	23.00	28.75	34.50	41.50	57.75	93.50	132.00	*****	
ingle Safety Valves	5.00	5.80	7.80	13.25			28.75							
ross Safety Valves	* * * * * *						34.00							****
ingle Safety Valves							34.00							222
wing Check Valves							20.00							
wing Check Valves							24.00							168.
enkins Disc Check Valves Scd., "	****	15557		10.50	14.00	17.00	20.00	25.00	30.00	40.00				20.65
enkins Disc Check Valves	****	****	2 00	12,50	10.50	20.00	23.00	28.00	33.00	43.00	******	100 00	100 00	200-
xpansion Joints, Iron BodySed., "			7.00	8.00	10.00	14.00	18.00	30.00	38.00	45.00	70.00	100.00	160.00	225.
xpansion Joints, Iron BodyFlg'd, "			13.00	10.00	18.50	25.00	30.00	40.00	48.00	33.00	80,00	110.00	175.00	250.
xp. Jts., Iron Body, 6" Trav'seScd., "				13.00	17.00	25.00	30.00	40.00	40.00	00.00				
xp. Jts., Iron Body, 6" Trav'seFlg'd, "							40.00							
Veber Valves							19.00							
Veber Valves			10.00	10.00	14.00	17.00	23.00	25.00	31.50	30.50	49.00	58.00	95.00	133.
enkins Type "K" Gate ValvesScd., " enkins Type "K" Gate ValvesFlg'd, "			12.00	12 50	16.00	10.00	19.00	24.00	21.50	32.50	45.00	59,00	90.00	125.
enkins Type "K" Gate Valves Flg'd, "			12.00	15.50	10.00	19.50	23.00	25.00	31.50	30.50	49.00	38.00	95.00	133

LONG SWEEP (WATER) FITTINGS

Sizes	.1	11/4	11/2	2	21/2	3	31/2	4	41/2	5	6	7	8	9	10	12
No. 1 Water Elbows, C.I	\$0.32	\$0.40	\$0.55	\$0.80	\$1.20	\$2.25	\$ 3.25	3.50	\$ 5.50	\$ 6.50	\$ 8.75	\$13.00	\$17.00	\$25.50	\$30.00	\$40.00
No. 2 Dbl. Water Elbows	. 64	,80	1.10	1.60	2,40	4.50	6,50	7.00	11.00	13.00	17.50	26.00	34.00	51,00	60.00	80.00
No. 3 Water Tees	.48	.60	.82	1.20	1.80	3.40	4.90	5.25	8.25	9.75	13.25	19.50	25.50	38.00	45.00	60.00
No. 4 Water Crosses	.85	1.10	1.50	2.15	3.20	6.00	8.75	9,50	15.00	17.50	24.00	35.00	45.00	68.00	80.00	107.00
No. 1 Water Elbows, Red'g	.48	. 60	.83	1.20	1.80	3.38	4.88	5.25	8.25	9.75	13.13	19.50	25.50	38.25	45.00	60.00
No. 2 Dbl. W. Elbows, Red'g	.96	1.20	1.65	2.40	3.60	6.75	9.75	10.50	16,50	19.50	26.25	39.00	51.00	76.50	90.00	120.00
No. 3 W. Tees, Red'g	.72	.90	1.23	1.80	2.70	5.10	7.35	7.88	12.38	14.63	19.88	29.25	38.25	57.00	67.50	90.00
No. 4 Water Crosses, Red'g		1.65	2.25	3.23	4.80	9.00	13,13	14.25		26.25	36.00	52.50	67.50	102.00	120.00	160.50

CAST IRON FITTINGS

01			-			CHS	1	TON	FII	III	IGS										- 10.
Sizes	1/4	3/8	1/2	3/4	1	11/4	11/2	2	21/2	3	31/2	4	41/2	5	6	7	8	1	9	10	12
Dileme O I	8 c.	S c. 5	8 c. 8	s c.	\$ c.	\$ c.	\$ c.	\$ c.	8 c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	8 (. 8	c.	\$ c.	S c.
Elbows, C.I	.05		.06		$10^{\frac{1}{2}}$. 16	.20	. 28	. 50			1.20	1.75	2.00	2.75	4.70	6.7	5 9	.00	13.50	20.00
" Reducing " R. and L	.06		.07		.12	.18	.23	.32	.60	.85	1.20	1.40	2.00	2.30	3.15	5.40	7.7	5 10	. 50	15.50	23.00
" 45°	.06		.07		.12	.19	.24	.34	.60			1 45	2 20	2 50	3.45	5 90	8 5	oii	25	7 00	25 00
Tees	.08	.08	.09	.12	.15	. 23	.29	.41		1.10	1.50	1.75	2.55	3.00	4.00	6.80	9.7	513	00	19.50	29.00
Tees Reducing			.10	.14	.17	. 27	.33	.47	.83	1.25	1.75	2.00	2.95	3.50	4.60	7.80	11.2	5 15	.00	22.50	33.50
Crosses			10	95	.27	.42	.53	.75		2.00	2.70	3.15	4.60	5.50	7.25	12.25	17.5	023	.50	35.00	52.50
Return Bends, Close	2723	****	.10	.25	.30	.46	.60	.83		2.20	3.00				8.00						
" Open					.30	.40	.55		1.35	2 20								3 : ~			
" Pitched					.26	. 33												1			
Caps, C.I		4747						. 26		-		.87	1.05	1.20	1.55	2.50	2.8	5 4	.75	5.50	7.00
Reducing Couplings, C.I Reducing Couplings, Eccen	tric	C'i						1.00	The second second	.80		1.35	1.85	2.00	2.70	5.35	6.7	5 8	.35	10.00	15.00
Unset Reducing Couplings.				20.30	60	70	90	1.10	77.7		3.00		5.00	6.00	8.00	9.00	11.0	012	. 50	14.00	18.00
Locknuts, C.I								. 25		.34					1.30	1 70	2 3	5 2	70	3 00	4 00
Couplings, W.I	.05	.06	.07	.10	. 13	.17	.21	.28	.40	.60	.85	1.00	1.50	1.65	2.40	3.25	4.2	5 5	.50	7.50	10.00
Grip Couplings, Plain Galv'd	.30	.60		.60		1.20															
Mall. Union Elbows, with	.40	.00	.10	.901	.20	1.80	2.40	3.00													
Male Union	.43	.45	.48	.62	.72	1.05	1.20	1.80	3.30	*****			100						100		
Hexagon R. & L. Nipples				.25	.30	.40															
Plugs, R. H	.02	.02	.02		.04	. 05	.07	.10		.25	.38	.42	. 65	.88	1.20	1.85	2.7	5 3	. 25	3.78	5.00
" Left	04	04	04	.06	.08	.09	.11	.15			*****										
" Solid	.01	.01	.04	.06	.08	.09		.20		.50			1 00	1 25	1.80					****	29.41
Countersunk			.04	.06		.09	.11	.15				1000	2 2 1 1 1 1 1 1		1.00	1 1 1 1 1 1 1 1 1 1 1 1 1					100 00000000000000000000000000000000000
Bushings, R. H				.05		. 07	.09	.14	.21	.30		.50	.75	.93	1.25	1.87	2.7	5 3	.25	3.78	5.00
Left						. 14	.18										,				
Faced		.08		.10		.14	.18			70	1 20	7 50	0.10	0 00	0 75						
Eureka Circulating Tees		.00	.00		. 10					1 50	1 90	2.20	3 20	3 70	3.75		15 6	· ·			
Range Boiler Couplings			.60	.75 .												0 D 1 W W		910	Charle		
Crossovers, Black				.30	.45																
" Galvanized		25.4	. 25	.40	. 60							Luci									

STANDARD CAST IRON FLANGED FITTINGS

For Steam Working Pressures up to 125 pounds

Size	11/4	11/2		2	21/2	3		31/	2	4		41/	2	5		6		7	1	8	9		10)	12		14		15	5	1	6	1	8	20	0	1	22		24
Elbows—	\$ c.	S c	. 8	c. §	6 c.	s	c.	S	c.	8	c.	S	c.	s	c.	S	c. :	S c	S	c.	s	c.	S	c.	8 c	83	,	c.	s	c.	S	c.	8	c.	s	c	. 8		c. §	3
		3.00																																						
45°, Faced 45°, F. & D.	3.30	3.30	03.	30:	3.50	3.	80	4.	50	5.1	00	6.1	00	6.	90	8.3	51	1.00	12	. 60	17.	75	20.	00 2	9.50	1	11.5	50	47.	00	54	.50	71	.00	90	.00	11	3.0	00 14	10.0
Taper Redc'g		10.00																	1					005		1							200							
F. & D Tees—																								70.5				7 4			9. F X		214		9.2.7	***				
Faced F. & D	$\frac{4.35}{5.25}$	4.3 5.2	54.	35	$\frac{1.55}{5.45}$	5.	00	5.	85 10	8.	50	8.1	00 50 1	9.	$\frac{101}{601}$	1.0	001	$\frac{5.2}{7.5}$	17	. 40	24 . 28 .	65	27. 31.	$504 \\ 504$	0.505.00) (50.0 55.5	00 50	68. 74.	75	79 86	.00	$\frac{103}{112}$.00	$\frac{130}{140}$.00	16	4.0	0020	3.6
		5.00																																						
F. & D		100																								1				1				.00	160	.00	120	2.(00 24	18.0
F. & D		7.9					7.00																										1 10 10							
**************************************																																		e*.	* * *					
F. & D	,		. 8	95%	9.20	10.	15	12.	05.	13.	. 00	10.	15	17.	152	1.	52	9.0	033	. 10	47.	50	03.	20 7	7.00	11	12.6	00 1	21.	.00	148	.00	4.6.6	***	* * *	244	* * *	* * *		

Dimensions for drilling of Flanged Fittings, same as Flanges, see pages 221 and 223.

STANDARD CAST IRON FLANGED FITTINGS

For Steam working Pressures up to 125 pounds

Size	11/4	11/2	_ 2	21/	3		31/2	4		41/2		5	6		7	8	3	9		10	12	2	14		18		16		18		20		22	24	4
Elbows—	\$ c.	\$ c.	\$ c	. \$ 0	. \$	c. \$	\$ c.	\$	c.	\$ c	. \$	c.	\$	c.	\$ c.	\$	c.	s	c. :	\$ c.	\$	c.	s	c.	\$	c.	\$	c.	8	c.	\$	c.	\$ c	. \$	c.
With Base, Faced F. & D										1.00																			105. 111.						
Long Turn, Faced F. & D				5.2	5 6.	75 85	6.75 8.00	7	50 00 1	9.2	5 10 5 12	.50	12. 14.	65 1 60 1	7.50 9.75	20. 22.	00 2	28.5	03: 53:	1.50 5.50	46. 51.	50 00	69 . 74 .	00 50	78. 84.	00 75	91. 98.	00 I	118. 127.	00	150. 160.	00			
Reducers— Faced F. & D	,									1.00																									
Eccentric, F. & D	+***									111													70. 73.	00 75	80 84	00 50	90. 95.	00	105.	00	120. 127.	00	150.00 159.00	190	00.00
																																	248.00 266.00		
Reducing, Faced F. & D			7.7	58.0	8.	75 10 15 1:	0.35	11. 13.	50 I	3.7	5 1 5 1 7	.75 .75	19. 21.	25 2 75 2	6.50 9.50	30.	50	13.0 17.5	004	8.00	71. 77.	00	105 112	00	118	00	138. 148.	00	180. 192.	00	228. 242.	00	285.00 303.00	0355	.00

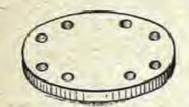
Furnished faced only, unless otherwise ordered.
Flanges, Flanged Fittings and Valves are drilled in multiples of four, so that they may be made to face in any quarter, and holes straddle centre line.

The list price of Eccentric Reducers is the list for Reducers, from the sizes listed reduced to any size smaller. To figure cost of a Reducing Fitting, use list price of largest size on it.

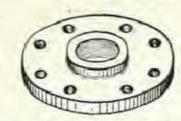
Dimensions for drilling of Flanged Fittings, same as Flanges, see pages 221 and 223.

STANDARD CAST IRON COMPANION FLANGES

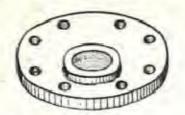
For Steam Working Pressures up to 125 pounds



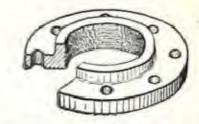
Blind Flange Drilled



Reducing Flange Drilled



Eccentric Reducing Flange Drilled



Regular Flange Drilled

Dimensions and List Prices

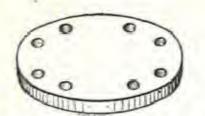
Size of TappingInches	3/4	1	11/4	11/2	2	21/2	3	31/2	4	41/2	5	6	7	8	9	10	12	14	15	16	18	20	22	24
Diam. of FlangeInches Thickness of FlangeIns. Diam. of HubInches Length of ThreadInches Diam. of Bolt Circle, Ins. Number of Bolts Size of BoltsInches Length of BoltsInches Diam. of Bolt Holes, Ins.	11/2 5/8 21/2 4 3/8 11/2	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	33/8 4	7/8	4	116	4 1 1 8 6 4 5 8	8½ 116 478 116 7 4 58 2½ 34	53/8 1 1 1 6 7 1/2 8 5/8	11/4	6 1 6 1 6 8 1 2 8 3 4 3	$\begin{array}{c} 1 \\ 7\frac{9}{16} \\ 1\frac{7}{16} \end{array}$	1 16 85/8 11/2 103/4 8	15/8 113/4 8 3/4 31/4	11/8 105/8 13/4 131/4 12 3/4 31/4	11 16 1 1/8 14 1/4 12	17 12 7/8	21 13/8 15/16 23/16 183/4 12 1 41/4 11/8	16 16 2 16 20 16 1 4 1/4	$\begin{array}{c} 1_{16}^{16} \\ 17_{2}^{12} \\ 2_{16}^{16} \\ 21_{4}^{14} \\ 16 \\ 1 \\ 4_{4}^{14} \end{array}$	1 16 19 16 25/8 223/4 16 1 1/8 4 3/4	2134	118 2378 278 2714 20 114 51/2	17/8 26 3 29 1/2 20 11/4 51/2
Faced and Threaded each Faced, Drilled & " Faced, but Blind" Faced and Drilled, but Blind Bolts for one joint,		.55	.60 .85	.90	1.00 1.15 1.40	1.10 1.30 1.55	1.25 1.40 1.70	1.55 1.80 2.15	2.45	1.90 2.20 2.65	2.05 2.40 2.85	2.50 3.00 3.50	3.25 4.00 4.60	3.80 4.60 5.30	4.65 5.75 6.55	5.50 6.75 7.75	7.65 9.75 10.90	10.35 13.50 14.85	13.20 17.00 18.70	13.50 15.30 20.00 21.80	18.00 24.00 26.00	21 . 50 28 . 00 30 . 50	25.00 33.00 36.00	30.50 40.00 43.50
per set					. 25	.25	.25	.25	.50	.75	.75	.75	.75	. 80	1.20	1.60	1.70	2.50	3.30	3.30	5.00	6.20	8.40	8.40

FURNISHED SMOOTH FACE AND NOT DRILLED, UNLESS OTHERWISE SPECIFIED.

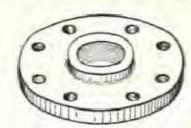
When ordering Companion Flanges, give size of tapping required first, then the outside diameter and if reducing state whether eccentric or ordinary.

STANDARD CAST IRON REDUCING COMPANION FLANGES

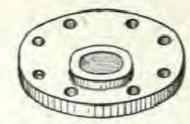
For Steam Working Pressures up to 125 pounds



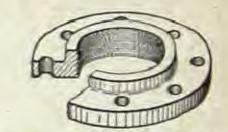
Blind Flange Drilled



Reducing Flange Drilled



Eccentric Reducing Flange Drilled



Regular Flange Drilled

Dimensions and List Prices

Outside I	Diameter,	Ins.	6	7	71/2	81/2	9	91/4	10	11	121/2	131/2	15	16	19	21	221/4	231/2	25	27½	291/2	32
Size of T	apping		1 1½ 1½ 1½	11/2	1½ 2 2½	2 2½ 3	2 2½ 3 3½	31/2	2 2½ 3½ 4	2 2½ 3 3½ 4	5	2 2½ 3 4 5	6 7 8	2½ 3 3½ 4 5	7	8 9 10 12	8 10 12 14	10 14 15	12 14 15 16	14 15 16 18	15 16 18 20	14 16 18 20
> ".	1.1									4½ 5		6 7		6								
	dy			1.45		13							1000	1200				33				1-000

Furnished smooth face and not drilled, unless otherwise specified.

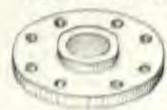
Special Eccentric Flanges, when ordered.

When ordering Companion Flanges, give size of tapping required first, then the outside diameter, and state whether eccentric or ordinary.

EXTRA HEAVY CAST IRON COMPANION FLANGES

For Steam Working Pressures up to 250 Pounds









Blind Flange Drilled

Reducing Flange Drilled

Eccentric Reducing Flange Drilled

Regular Flange Drilled

And Special Facing Dimensions of Extra Heavy Flanged Fittings, Flanges and Medium and Extra Heavy Valves

Dimensions and List Prices

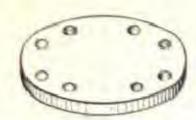
			-																						
Size Inches	1	134	11/2	2	232	3	834	4	436	ō.	6.	7	8	α .	10	(2)	14	12	1	15-	13.	20	-23	2 2	4
Diameter of Hub Ins. Diameter of Flange Thickness of Flange Lg'thof Pipe Thread Diam. of Bolt Circle Number of Bolts Size of Bolts Length of Bolts Diam. of Bolt Holes	2 1 4 1 1 3 1 4 4 4 2 2 3 4		1412	114	759 1 1 /a 5 /a 4	114 174 174 185 8	0 1 1 1 1 1 2 2 7 3 4 8 3 4	134 134 773 8	5444	11 11 11 11 11 11 11 11 11 11 11 11 11	1.4.	1 1 1 1 1 2 1 1 2 1 1 2 1 1 1 1 1 1 1 1	186	12		2017	2000	20 mg 11 20	200		2010	22 / 30 (21 35 27 24 15 65 13	3	Ay .	0 24 11 2
Faced and Threaded each Faced and Drilled Faced, but Blind Faced and Drilled, but	A CHU	I	.651	902	102	40/3	003	353	. 604	.00.2	000	607	66	5 30 7 50 9 50 1	1 001	5 00 6 00	17 00 32 50	21	50010	5000	9.000	35 00 16 00	134	00.50	00
Blind	****	2	25	.252	.40	853	80	80	80	85 1				0.70 £											

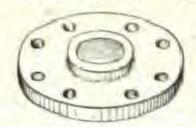
Furnished faced only, unless otherwise ordered.

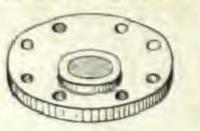
When ordering Companion Flanges, give size of tapping required first, then the outside diameter.

EXTRA HEAVY CAST IRON REDUCING COMPANION FLANGES

For Steam Working Pressures up to 250 pounds









Blind Flange Drilled

Reducing Flange Drilled

Eccentric Reducing Flange Drilled

Regular Flange Drilled

Dimensions and List Prices

Outside	e Diam	ieter	Inches	6	612	712	814	9	10	10½	11	121/2	14	15	1614	1732	201/2	23	24 1/2	251/2	28	301/2	33	36
Size of	Tappi	ng	Inches	134	11/2	11/2	11/2	2	2	2	2	2	416	3	4	5	6	8	8	10	12	14	16	18
-8.9	**	*****	**	-		2	2	21/2	21/2	21/2	21/2	21/2	5	31/2	5	6	7	9	10	12	14	15	18	20
33	-11		**				212	3	3	3	3	3	6	4	6	7	8	10	12	14	15	16	20	
11	**		110						31/2	31/2	31/2	4		5	7	8	9	12	14	15	16	18_		
46	18.6	++++++	ii							4	4	43/2		6	8	9	10							
14.		3 864643	- 11								434	5		7						z				
Faced o	only			1.80	2.10	2,30	2.65	3.30	3.70	4.00	4.40	5.50	7.25	8.40	10.50	12.00	17.50	25.00	31.50	37.00	43.00	51.00	60.00	74.00
Faced a	and Dr	illed,		2.15	2.45	2.65	3.10	3.85	4.40	4.70	5.10	6.25	8.15	9.45	11.70	13.50	19.25	27.00	34.00	39.75	46.00	55.00	65.00	79.00

Furnished faced only, unless otherwise ordered.

Special Eccentric Flanges when ordered.

When ordering Companion Flanges, give size of tapping required first, then the outside diameter, and state whether eccentric or ordinary.

GALVANIZED MALLEABLE IRON FITTINGS

Price List per Piece

Size	1/8	1/4	3/8	1/2	3/4	1	11/4 -	11/2	2	21/2	3	31/2	4	41/2	5	6
Ells		\$0.09	\$0.11	\$0.14	\$0.20	\$0.32	\$0.40	\$0.60	\$0.90	\$1.50	\$2.60	\$3.75	\$5.00			\$10.00
Reducing Ells	. 08	.09	.11	.14	.20	.32	.40	.60	.90	1.50	2.60	3.75	5.00		6.50	10.00
45° Ells		.12	.15	.20	.23	.35	. 45	.65	1.00	1.90	3.75	1 75	6.75		9.00	11.0
Street Ells		.12	.12	.15	.28	.35	. 55	.80	1.30	2.25	3 50	4.13	0.75	*****	9.00	
Side Outlet Ells			.10	.15	.25	.45	. 65	.90	1.50							
Drop Ells, Short		.09	.12	.20	.35											
Drop Ells, Long			.18	.27		*****	*****			11111	12122	-: - : : :	* 1 * 2 1 1			
Tees		.10	.13	.16	.20	. 38	. 50	.70	1.00	1.90	3.00	4.25	5,75	127450	8.00	12.0
Reducing Tees		.10	.13	.16	.20	. 38	. 50	1.10	1.00	1.90	3.00	2.70				12.0
Drop Tees, Short			.15	.25	.40	.00	.40	1.10	1.10				111104			
Drop Tees, Long			.17	120		*****					008401		1 1 1 10 10 1			
Crosses		.12	.14	. 25	. 29	.45	. 60	.90	1.50	2.75	4.50		8.00			
Reducing Crosses	And I de Marie and Annual Control of the Control of	.12	.14	.25	. 29	. 45	. 60	.90	1.50	2.75	4.50		8.00			
Caps		.04	.05	.08	.12	.17	. 24	.38	.52	.76	1.30	1.60	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		12/1/2/15	5.0
Locknuts		.03	.04	.05	.07	.10	.14	.20	.30		*****		*****	*****	282528	****
Right Couplings		.05	.07	.10	.17	. 23	.30	.40	.55	.95	1.40		******			
Reducing Couplings		.08	.10	.10	.15	. 25	.35	.45	.75	1.05	1.65	2.40	3.05			
Right and Left Couplings		.06	.09	.10	.17	. 25	. 35	. 55	.75	1.05	1.50					
Close Return Bends				.25	.35	. 55	.75	1.15	1.65							
Open Return Bends					.45	.70	.90	1.25	2.00	3.50	5.00	*****				
Crossovers			.09	.25	.40	. 60					*****	*****	******	*****		****

BLACK MALLEABLE IRON FITTINGS

Price List per Piece

Size	1/8	1/4	3/8	1/2	3/4	1	11/4	11/2	2	21/2	3	3½	4	41/2	5	6
Ells	.06	.07 .09 .08 .10	\$0.08 .08 .11 .10 .10	\$0.10 .10 .13 .12 .12 .10	\$0.15 .15 .17 .18 .20 .18	\$0.22 .22 .25 .26 .25 .30	\$0.25 ,25 ,30 ,36 ,40 ,45	\$0.35 .35 .40 .54 .55	\$0.50 .50 .65 .82 .90 1.00	\$0.90 .90 1.25 1.50	\$1.50 1.50 2.50 2.25	3.25	3.00 4.50 3.50	3.50	\$4.00 4.00 6.00	\$ 6.50 6.50 7.50
Drop Ells, Short Drop Ells, Long Tees Reducing Tees. Four-Way Tees. Drop Tees, Short Drop Tees, Long Crosses Reducing Crosses Caps	.07	.08	.08 .10 .09 .09 .12 .10 .12 .10 .10	.12 .18 .11 .11 .14 .14 .16 .16	.20 .15 .15 .20 .22 .30 .20 .20 .20		.30 .30 .50 .50 .60 .40 .40			1.05 1.05 1.75 1.75 1.75	1.70 1.70 1.70 3.00 3.00 3.85	2.50 2.50 2.50 3.25 3.25 1.00	5.25 5.25	4.25 4.25	7.50 7.50	
Locknuts Waste Nuts Right Couplings Reducing Couplings Right and Left Couplings Close Return Bends Open Return Bends Crossovers Extension Pieces	.03	· · · · · · · · · · · · · · · · · · ·		.04 .06 .07 .07 .08 .18 .20 .20	.05 .08 .10 .10 .12 .25 .30 .30	.07 .10 .14 .16 .16 .35 .50 .45	.09 .15 .20 .20 .25 .50 .65	.11 .25 .25 .28 .36 .75 .85	.18 .35 .45 .52 1.00 1.25	.60 .70 .70	.90 1.00 1.00	1.50	1.85			

MALLEABLE IRON FITTINGS

Class	A	- B	C
ELBOWS	1/8 x 1/8 1/4 x 1/8 3/8 x 1/8	3/8 x 1/4, 1/2 x 1/4	* % and larger
Elbows, R. & L	1/4 and 3/8	1/2 x 1/8 1/2, 3/4 and 1 1/4, 3/8, 1/2 and 3/4	† 11/4 and larger
" 45°		34 x ½, 1 x ¾ 34 to 2 inclusive All sizes	$\frac{1}{2}$ and larger and larger
TEES	1/8 x 1/8, 1/8 x 1/4 1/4 x 1/8 1/2 x 1/8, 3/8 x 1/8	3/8 x 1/4 x 1/4 x 3/8 3/8 x 1/4 x 1/4 . 3/8 x 1/4 3/8 x 1/4 x 3/8 1/2 reducing	* ¾ and larger
Tees, 4-way		All sizes All sizes	
Crosses, Straight	1/4	1 to 1 inclusive 1 and smaller 38 to 1	1 14 and larger † 1 4 and larger 1 4 and larger
Couplings, R. H	3% and 1/2 1/8 1/8 1/8 1/8 1/8 x 1/8, 3/8 x 1/8	% and larger 14, 3%, ½ and 34 14, 3%, ½ and 34 28 x ¼ to 1 x %	1 and larger 1 and larger † 1% and larger
CapsLocknuts	18	14 to 1 inclusive 14 to 11/4 inclusive All sizes	1½ and larger 1½ and larger

*Such fittings in Class C as have one or more openings smaller than ¾ charged as Class B.
† Right and Left Elbows, Reducing Crosses, and Reducing Couplings in Class C having one or more outlets smaller than ¾ will be charged in Class B.

Price List

Class	A	В	C
Price per lb., blackcents	40	20	12
	50	28	19

PIPE HANGERS

Sizes	1/2	3/4	1 -	11/4	11/2	2	21/2	3	31/2	4	41/2	5	6	7	8	9	10
Exp. Ring Hangers, Complete	\$				\$0.25	\$0.29	\$0.36	\$0.44	\$0.55	\$0.63	\$0.90	\$1.12	\$1.35	\$1.80	\$2.25	****	
Exp. Ring Hangers, without Plates Grabler Hanger Rings	.14		.12		.20	.25	. 30	.40	.30	.60	.34	.36	.40	1.70	.88		
*Grabler Extension Bar, 10 ft. lengths, per foot	.08	. 08	.08	.08	.08	.09	. 09	.09	. 10	.10	.10	.10	.10	. 20	.20	,28	. 28
Ring Stays, short, black per 100 short, galvanized								the second second									
long, black				And the second second		100000000000000000000000000000000000000		2000 200	12 3 2 2 2 2 3	3 5 5 5 5							

*½ in. Grabler Extension Bar used on Hangers up to 1½ inch. 1 in. Bar on Hangers 2 to 3 in. 1½ in. Bar on Hangers 3½ to 6 in. 1¼ in. Bar on Hangers 7 to 8 in. 1½ in. Bar on Hangers 9 and 10 in.

HOOK AND RING PLATES

Number of Branches		1	2	3	4	5	6	7	8	9	10	11	12
Hook Plate 1 in. pipe, 2½ in. centre to 1¼ 3 1½ 3½ 2 4½		\$0.09 .10 .15 .22	\$0.18 .21 .28 .43	\$0.23 .27 .43 .65	\$0.26 .32 .58 .90	\$0.32 .41 .72 1.15	\$0.38 .52 .88 1.35	\$0.48 .68 1.10	\$0.59 .80 1.25	\$0.65 .90 1.40	\$0.75 1.00 1.55	\$0.85 1.35 1.65	
Ring Plate 1 in pipe, 2½ in centre to 1¼ " 3	es o centre	.16	.28	.41	.50	.62 .75	.72 1.10	.96 1.25	1.00	******			

GRABLER STEEL HOOK PLATES

Size	1	11/4	11/2	2
Number of Hooks	30	30	25	20
	\$2.50	\$3:25	\$3.75	\$4.25

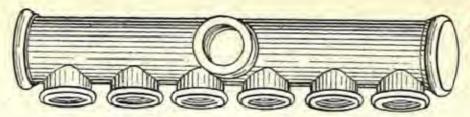
UNIONS

Black and Galvanized Union

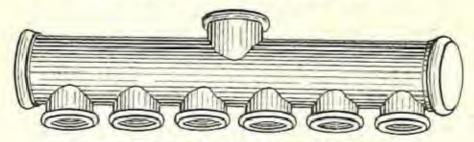
Size	1,	4	3)	8	1,	2	3.	4	1		13	1/4	1.	1/2	3	2	2	1/2		3
-	В	G	В	G	В	G	В	G	В	G	В	G	В	G	В	G	В	G	В	G
Lip Kewanee Dart	. 19	\$ c. .27 .23 .45	.20	.30	\$ c. 22 27 50	. 33	.27	.40	. 33 48	. 50	-46 -66	.70 .82	.80	1.10	.75 1.14	$\frac{1.15}{1.40}$	$\frac{1.55}{2.10}$	$\frac{2.35}{2.75}$	$\frac{2.10}{2.65}$	$\frac{3.15}{3.50}$

Flange Unions

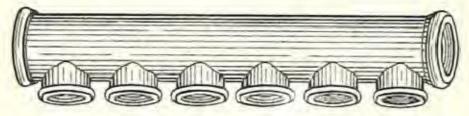
Size	1	11/4	11/2	2	21/2	3	31/2	4	41/2	5	6	7	8	10	12
Standard	. 52	.64	.78	1.00	1.25	1.50	1.80	2,10	2.70	3.15	3.95	5.50	\$ c. 7.00 18.00	11.50	16.00



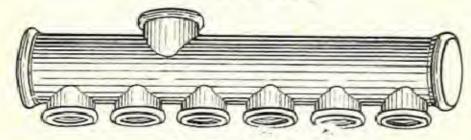
A. Side feed in centre



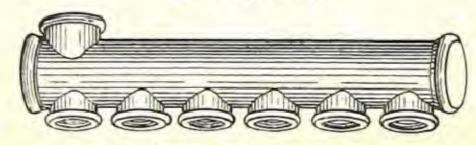
B. Back feed in centre



C. End feed



D. Back feed



E. Back feed near end

STEAM FITTERS' SUPPLIES

BRANCH TEES OR HEADERS

Branch Tees for Box Coils are always tapped right hand in branches and right hand in back inlet, unless otherwise ordered.

The end and back opening of Branch Tees are tapped the same size as branches, unless otherwise ordered.

	1 in.	Branch	Tees	11/4 in	. Branc	ch Tees	1½ in	. Branc	h Tees	2 in.	Branch	Tees
No. of	2½ i	n. Cen Centre			. Cent			n. Centre		4½ i	n. Cen Centre	
Bran- ches	l in. or 1¼ in. Run	1½ in. Run	2 in. Run	1¼ in. or 1½ Run	2 in. Run	2½ in. Run	1½ in. or 2 in. Run	2½ in.	3 in. Run	2 in. Run	2½ in. or 3 in. Run	3½ in. Run
2 3 4 5 6 7 8 9 10 11 12 13 14 15	\$0.90 1.05 1.15 1.35 1.60 1.90 2.20 2.65	\$1.00 1.15 1.30 1.45 1.75 2.20 2.45 2.90 3.30 4.50 4.75 5.50 7.00 7.50	\$1.15 1.35 1.60 1.85 2.10 2.45 2.75 3.40 4.00 4.80 5.10 6.00 7.25 7.75		\$1.90 2.40 2.90 3.30 3.90 4.50 5.25 5.85 6.25 6.50 7.00 7.75 8.50	\$2.40 2.85 3.55 3.95 4.20 4.95 6.15 6.85 7.25 7.65 8.25	3.35 4.00 4.65 5.25 5.85 6.50 7.60 8.00 8.50	4.15 5.00 5.75 6.50 7.00 8.25 9.25 9.75 10.50	4.60 5.50 6.25 7.25 7.75 9.00 10.00 10.75 11.50	6.40 7.65 8.80 10.60 11.50 12.25 13.50	\$5.75 7.00 8.50 9.75 11.75 12.75 13.50 15.00	7.75 9.25 10.75 13.00 14.00 15.00 16.50

1 inch Branch Tees, 1 inch or 1¼ inch run, are 1¾ inches inside diameter.
1 inch Branch Tees, 1½ inch or 2 inch run, are 2¼ inches inside diameter.
1¼ inch Branch Tees are all 2½ inches inside diameter.
1½ inch Branch Tees are all 2¾ inches inside diameter.
2 inch Branch Tees are all 3½ inches inside diameter.
When more than one feed is required, same will be charged as an extra outlet. Back or side outlets charged as an extra outlet. In ordering please state whether header is to be made as per A, B, C D or E.

WROUGHT IRON NIPPLES

Black Iron-Right Hand

	-	Diack		Tingin			-					_
Length in Inches	1 40	Pr	ices			Price	e of E	xtra L	ong N	Vipples		
Length in Inches	Size,	Close	Di man				Leng	gth in	Inche	S		
Close Short Long	Thenes	Short	Long	4	5	6	7	8	9	10	11	12
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1/2 1/4 1/2 3/8 1/2 3/8 1/2 3/4 1 1/4 1/2 1/2 2 21/2 3 3/2 4 4 1/2 5 6 7 8 9 10 12	\$0.04 .04 .05 .06 .08 .11 .13 .18 .39 .48 .75 .85 1.25 1.55 1.85 3.20 3.55 5.25 6.75 8.00	\$0.06 .06 .07 .09 .13 .17 .20 .27 .59 .72 1.05 1.20 1.70 2.45 2.90	.07	.08	.10 .12 .13 .18 .24 .29 .38 .68 .85	.12 .14 .17 .23 .29 .36 .50 .90 1.08 1.30 1.52 2.25 2.58 3.05 4.05 4.55	.14 $.14$ $.16$ $.18$ $.25$ $.33$ $.40$ $.54$ $.97$ 1.20 1.45 1.69 2.50 2.83 3.35 4.45 5.05 6.50 8.25	$\begin{array}{c} .15 \\ .15 \\ .20 \\ .28 \\ .36 \\ .45 \\ .59 \\ 1.06 \\ 1.33 \\ 1.60 \\ 1.87 \\ 2.75 \\ 3.10 \\ 3.70 \\ 4.90 \\ 5.50 \\ 7.10 \\ 8.90 \\ \end{array}$	$\begin{array}{c} .17\\ .20\\ .22\\ .31\\ .40\\ .50\\ .65\\ 1.17\\ 1.45\\ 1.75\\ 2.05\\ 2.95\\ 3.35\\ 4.00\\ 5.30\\ 6.00\\ 7.75\\ \end{array}$	\$ 0.18 \$.18 .18 .22 .24 .34 .44 .54 .72 1.26 1.58 1.90 2.22 3.17 3.60 4.30 5.75 6.50 8.40 10.40 12.70	0.19 .19 .23 .26 .36 .47 .59 .77 1.35 1.70 2.05 2.40 3.40 3.85 4.65 6.15 7.00 9.00 11.15 13.65

WROUGHT IRON NIPPLES

Galvanized-Right and Left

							D				Price	of Ex	tra Lo	ong Ni	pples		
	Len	igth ir	Inch	es		Size,	Pr	ices				Lengt	h in I	nches			
Close	Short		Lo	ng		Inches	Close or Short	Long	4	5	6	7	8	9	10	11	12
$ \begin{array}{c} 3/4 \\ 7/8 \\ 1 \\ 1 \\ 1 \\ 1 \\ 3/8 \\ 1 \\ 1 \\ 2 \\ 1 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 3/4 \\ 3 \end{array} $	$ \begin{array}{c} 1\frac{1}{2} \\ 1\frac{1}{2} \\ 2 \\ 2\frac{1}{2} \\ 2\frac{1}{2} \\ 2\frac{1}{2} \\ 3 \end{array} $	$ \begin{array}{c} 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\$	2½ 2½ 2½ 2½ 2½ 3½ 3½ 3½ 3½ 4 4 5	3 3 3 3 1/2 3 1/2 4 4 4 4 4 1/2 5 1/2 5 1/2	3½ 3½ 3½ 3½ 4 4½ 4½ 4½ 5 6	1/4 3/8 1/2 3/4 1 11/4	\$0.08 .08 .08 .11 .13 .18 .24 .29 .39 .83 1.04 1.60 1.84	\$0.13 .13 .13 .16 .19 .29 .37 .43 .57 1.25 1.54 2.24 2.56	\$0.15 .15 .15 .18	Mary and the second	.21 .21 .26 .27 .38 .51 .62	. 26 . 26 . 29 . 37 . 50 . 62 . 77 1 . 07	.29 .29 .34 .40 .53 .72 .83 1.15 2.08 2.56 3.12	. 32 . 38 . 43 . 59 . 80 . 96 1 . 28 2 . 24 2 . 83 3 . 44	.37 .37 .43 .46 .66 .88 1.07 1.39 2.48 3.09 3.76	.40 .46 .51 .72 .96 1.15 1.54 2.69 3.36 4.08	\$0.43 .43 .50 .56 .77 1.04 1.28 1.65 2.88 3.63 4.40 5.20



FLOOR AND CEILING PLATES

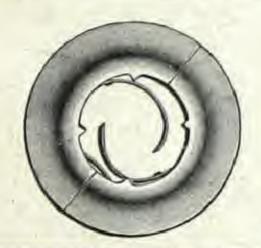
AJAX

Heavy Stamped Steel Adjustable Floor and Ceiling Plates



Handsome in Design and Substantially Constructed.

Size, inches	1/8	1/4	3/8	1/2	3/4	1	11/4	11/2	2	21/2	3
Black Nickel Plated	.14	.14	.15	. 16	.17	20 32	.22	.25	.30	.50 .65	. 65



MODEL

Adjustable Cast Iron Floor and Ceiling Plate, Two-Piece



Plain Iron or Nickel Plated

Size, inches	1/2	3/4	1	11/4	11/2	2	21/2	3
Plain	16 .27	.17	.20	. 22	.25	.30	. 50	.65



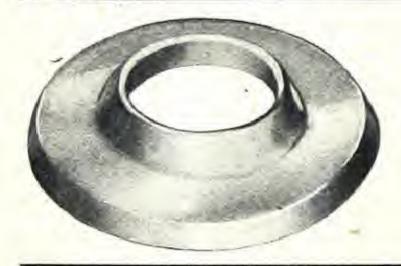
FLOOR AND CEILING PLATES
D. R. Co.

Special Pattern Cast Iron Ceiling Plates

Plain Iron or Nickel Plated



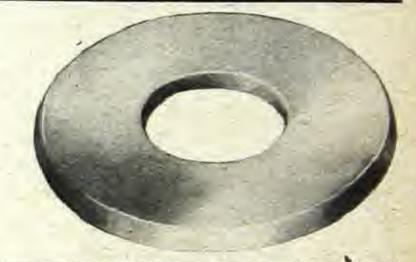
Sizes, inches	1/2	3/4	1	11/4	11/2	2	21/2	- 3	31/2	4
Plain	.11	.13	.16	.18	. 23	. 27	.36	. 50	.55	. 68



P. D. R. Co.

Special Pattern Cast Iron Floor Plates

Plain Iron or Nickel Plated



Sizes, inches	1/2	3/4	1	11/4	1½	2	21/2	3	31/2	4
Plain	.06	. 06	. 08	.11	.14	.16	.24	. 30	.35	.42

FLOOR AND CEILING PLATES

Below we list other styles of Floor and Ceiling Plates stocked by us.

Sizes, inches	1/2	3/4	1	11/4	11/2	2	21/2 .	3	31/2	4
Spun Brass Floor	. 14	. 14	18	.22	. 30	. 35	.42	. 55		
Spun Brass Ceiling with Set Screw, Plated		. 24	. 26	.32	. 38	.46	. 60	.80		
Grabler Floor	.27	.28	. 32	.35	. 38	.45	. 65	.80		
Grabler Ceiling	.27	. 28	. 32	. 35	. 38	.45	. 65	.80		
C. I. Double Floor Plain		. 15	.15	.15	.15				244	
C. I. Double Floor Plated		. 30	. 30	. 30	. 30					

CAST IRON FLOOR FLANGES

Size, Inches	Price, Each	Size, Inches	Price, Each	Size, Inches	Price, Each
1/4 x 21/2 3/8 x 3 1/2 x 3 1/2 3/4 x 3 1/2 1 x 4 1 1/4 x 4 1 1/2 x 4 1/2 2 x 5 1/2	*\$0.10 * .10 * .15 * .15 * .16 * .16 * .22 * .35	2½ x 6½ 3 x 7½ 3½ x 8½ 4 x 9 4½ x 9¼ 5 x 10 6 x 11 7 x 12½	*\$.50 0.75 1.00 1.15 1.25 1.50 1.75 2.20	8 x 13½ 9 x 15 10 x 16 12 x 19 14 x 21 15 x 22¼ 16 x 23½	\$ 2.80 4.00 5.00 7.50 9.50 14.00 18.00

Those marked * are Floor Flanges, drilled for screw.

The above is considered a complete list. Other sizes made to order.

EXPANSION TANKS

Our Expansion Tanks are thoroughly galvanized both inside and outside. Unless otherwise specified, the vent expansion pipe and water supply openings are all tapped for 1" dia. pipe connections. The water gauge openings are ½" pipe-size, and spaced 12" centres.

List Price-Complete with Gauge Glasses and Mountings

Size	Capacity U. S. Gallons	Sq. Ft. Radiation	Price of Tank	Price of Trimmings
12 x 24	12	500	\$4.00	\$1.10
12 x 30	15	800	4.50	1.10
14 x 30	20	1200	5.00	1.10

Brass Mountings only, without glass.....per set \$1.00

GAUGE GLASSES

Per dozen \$1.00 \$1.25 \$1.50 \$2.00	Per dozen	5% x 12 \$1.00	5/8 x 14 \$1.25	5/8 x 16 \$1.50	5/8 x 18 \$2.00
---------------------------------------	-----------	-------------------	--------------------	--------------------	--------------------

AUTOMATIC EXPANSION TANKS

Can be used on any hot water job containing up to 3000 feet of radiation.

8 x 17 x 10 Plain Oak	Copper Lined	0.75
9 x 20 x 10 Plain Oak	Copper Lined	1.25

COVERINGS

Moulded Asbestos, Air—Cell, and Mineral Wool Sectional Pipe Coverings and Fittings

Standard Thicknesses PRICE LIST

Inside Diam. of Pipe Inches	Price per Lineal Foot	Elbows	Tees	Crosses	Globe Valves	Flange Covers
1/2 3/4 1 1/4 1 1/2 2 1/2 3 3/2 4 4/2 5 6 7 8 9 10 12	\$0.22 .24 .27 .30 .33 .36 .40 .45 .50 .60 .65 .70 .80 1.00 1.10 1.20 1.30 1.85	\$0.30 .30 .30 .30 .30 .36 .42 .48 .54 .60 .72 .90 1.30 1.80 2.40 3.00 3.60	\$0.36 .36 .36 .36 .36 .42 .48 .54 .60 .75 .90 1.20 1.60 2.20 3.00 3.80 4.60	\$0.48 .48 .48 .48 .48 .54 .60 .70 .80 .95 1.10 1.50 2.00 2.80 3.60 4.40 5.20	\$0.54 .54 .54 .54 .60 .78 .96 1.20 1.50 1.85 2.25 2.80 3.60 4.40 5.30 6.20	\$0.50 .50 .50 .50 .50 .60 .70 .80 .90 1.00 1.30 1.60 1.90 2.20 2.50 2.90 3.30

All pipe coverings are supplied in sections three feet long, canvassed and with brass bands. For irregular flanges or fittings larger than 10 in. use Asbestos Cement or Asbestos Cement Felting.

ASBESTOS CEMENT

Asbestos Cement, per 100 lb. bag \$2.50

MINERAL WOOL

ASBESTOS SHEATHING

Asbestos Sheathing, per 100 sq. ft......\$10.00

HAIR FELT

In Rolls containing 300 square feet.

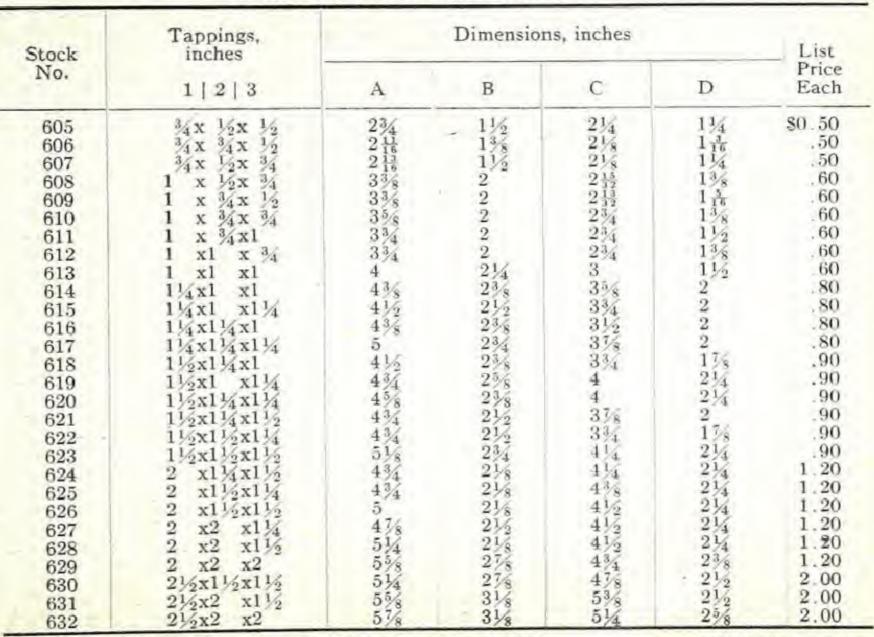
1/2	inch		,			×		\$1	2.00	per	100	square	fee+
												**	
1	"							1	6.00		2.2	n	11

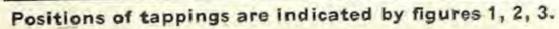
THERMOMETERS AND GAUGES

HOT WATER THERMOMETERS	
Hot Water Thermometer, straight, each	\$ 2.00
. Hot Water Thermometer, angle, each	2.50
Hot Water Thermometer, four inch circular dial, 50° to 250° each	10.00
ALTITUDE GAUGES	
Altitude Gauge, with five inch dial, iron case, brass rim, each	3.00
HIGH OR LOW PRESSURE STEAM GAUGES	
n or Low Pressure Steam Gauge, with five inch dial, iron case, N.P. rim, each	h 3.00
SYPHON FOR STEAM GAUGES	ELECTION AND
of Iron Pipee, length 8 inches	Inch 1/4 Each \$0.50
	The same
PRESSURE AND VACUUM GAUGE	
nbination Pressure and Vacuum Gauge, with five inch, dial, iron case, broadingtion	ass rim,
each	10.00

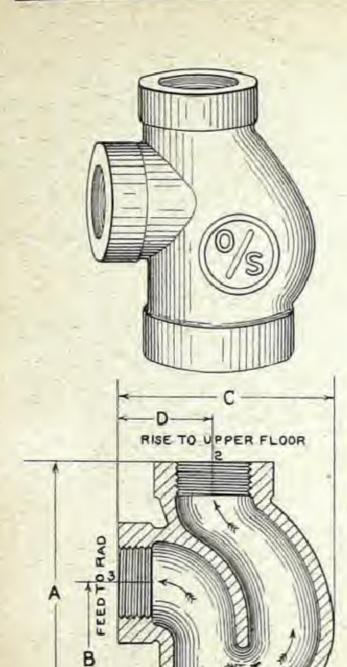
O. S. DISTRIBUTOR FITTINGS

PRICE LIST AND DIMENSIONS



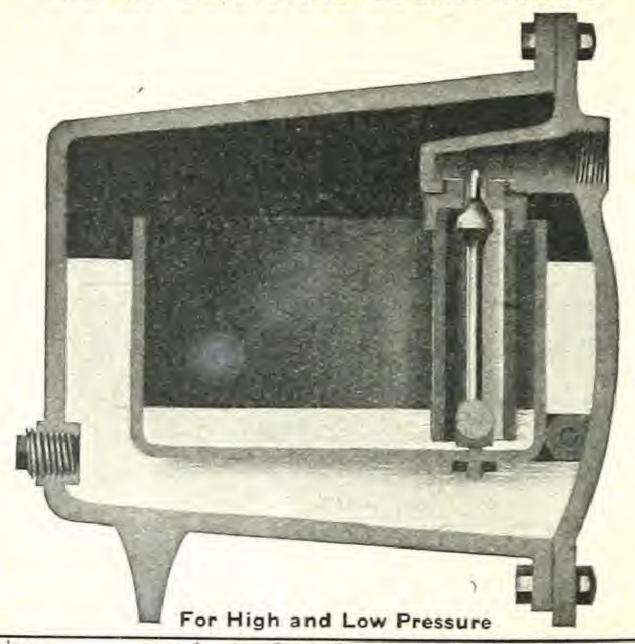


Order by number.



FLOW INLET

KIELEY STANDARD STEAM TRAPS



Number 1	2	3	4	5	6	7
Size Inlet 34	1	11/4	11/2	2	21/6	3
Size Outlet 34	1	11/4	11/2	2	21/2	3
No. lineal ft. 1 in.	2.100	A	PNS 103 1	4		-
pipe will drain 4,000	6,000	10,000	15,000	25,000	35,000	50,000
Price each\$ 25.00	35.00	45.00	60.00	80.00	100.00	125.00

KIELEY PRESSURE REGULATING VALVES

Size	Price	Size	Price	Size	Price	Size	Price
Inches	Each	Inches	Each	Inches	Each	Inches	Each
3/4 1 1½ 1½ 1 x2 1¼x2½ 1½x3	35.00 33.00 42.50	2½ 3 3½ 2 x4 2½x5	\$44.00 57.00 72.00 85.00 72.00 96.00 126.00		\$100.00 135.00 180.00 225.00 140.00 187.50 242.00	9 10 12 6x12	\$275.00 350.00 350.00 470.00 325.00 400.00 500.00

This valve can be made with the inlet and outlet end of different sizes than specified above. Prices on application.

We construct to order valves of larger sizes; also for higher initial pressures, or to meet special conditions. Price on application.

In ordering it is especially important that you state clearly the pressure desired to be reduced from and to what.

Weights and instruction given on application.

BACK PRESSURE VALVES

Size, inches	2	21/2	3	31/2	4	41/2	5	6
Standard, screwed flanged Kieley	11.00	13.00	$15.00 \\ 17.50$	19.00 22.00	$\frac{22.50}{26.00}$	$\frac{28.50}{32.00}$	37.00	43.00 47.00

GRAVEL BASINS AND BLOW-OFF RECEIVERS



PRICE LIST

Diam. Inches	Height Inches	Thick- ness of shell Inches	Thickness of Heads Inches	Capacity Gallons	Weight Pounds	Price with Manhole and Two Flanges
20	24	1/4	5-16	34	360	\$50.00
24	24	3/4	5-16	47	400	55.00
30	24	1/4	5-16	73	500	60.00
30	30	1/4	5-16	90	550	65.00
36	30	1/4	5-16	130	680	70.00
36	36	1/4	5-16	160	740	76.00
36	48	1/4	5-16	210	850	82.00

Flanges of any size required and located to suit purchaser. If handhole is used instead of manhole, deduct \$2.50, net.

REGISTERS AND VENTILATORS

Registers, Faces, Borders, for either Floor or Wall

LIST PRICES, BLACK JAPANNED

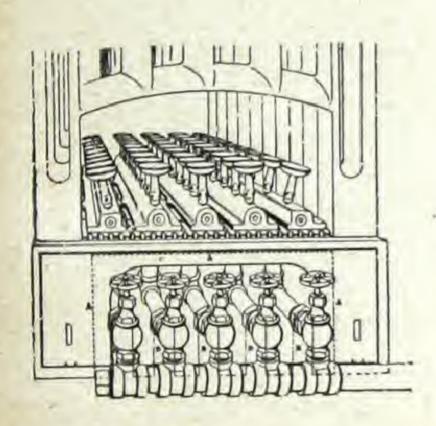
Size of Opening	Register	Register Face	Floor Border	Size of Opening	Register	Register Face	Floor Border
8x 8	\$ 1.60	\$ 1.05	\$ 1.20	16x32	\$31.00	\$13.10	\$13.10
8x10	1.65	1.10	1.25	16x36	36.00	16.00	16.00
8x12	1.90	1.30	1.50	18x18	18.50	7.20	7.20
9x12	2.10	1.45	1.65	18x21	20.50	7.75	7.75
10x10	2.35	1.65	1.70	18x24	21.50	8.35	8.35
10x12	2.40	1.70	1.75	18x27	27.50	10.75	10.75
10x14	3.15	2.20	2.20	18x30	31.25	13.25	13.25
10x16	4.85	2.95	2.95	18x36	38.00	17.25	17.25
10x18	6.70	3.70	3.70	20x20	19.75	8.00	8.00
10x20	8.90	4.35	4.35	20x22	21.60	8,40	8.40
10x22	10.40	4 90	4.90	20x24	22.00	8.60	8.60
10x24	12.15	5.35	5.35	20x26	23.50	9.50	9.50
12x12	4.00	2.70	2.70	20x28	28.90	11.50	11.50
12x14	4.35	2.80	2.80	20x30	33.50	13.50	13.50
12x15	4.50	2.90	2.90	20x32	37.50	17.10	17.10
12x16	5.60	3.50	3.50	20x36	43.00	18.50	18.50
12x18	6.80	3.90	3.90	24x24	30.00	12.00	12.00
12x24	12.25	5.50	5.50	24x27	33.95	14.00	14.00
14x14	7.90	4.05	4.05	24x30	38.00	17.25	17.25
14x16	8.50	4.30	4.30	24x32	42.50	18.00	18.00
14x18	9.00	4.50	4.50	24x36	50.00	22.00	22.00
14x20	9.50	4.80	4.80	24x45	67.50	28.50	28.50
14x22	10.50	5.00	5.00	27x27	37.25	17.00	17.00
16x16	11.00	5.10	5.10	27x38	56.00	25.00	25.00
16x18	12.00	5.30	5.30	28x28	44.00	19.00	19.00
16x20	12.35	6.10	6.10	28x30	48.50	21.00	21.00
16x22	14.75	6.70	6.70	28x32	53.00	24.50	24.50
16x24	15.00	7.00	7.00	28x36	64.00	27.00	27.00
16x28	24.60	10.00	10.00	30x30	49.00	21.50	21.50
16x30	27.90	11.00	11.00	30x36	67.50	28.50	28.50



Ventilators for Cords—50 cents list extra on sizes up to 14 x 14, and \$1.00 list extra on sizes above.

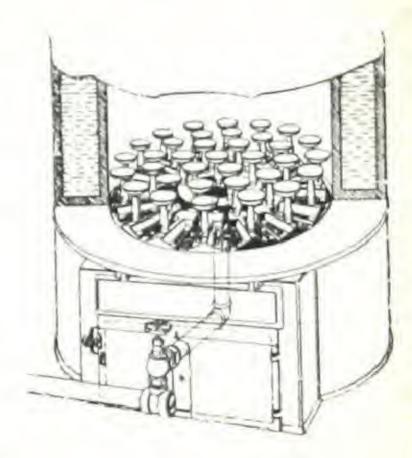
"STANDARD" GAS SAVING BURNERS

Most Economical - Most Efficient



"Standard" Gas Saving Burners applied to Steam Heating Boilers, Hot Water Heating Boilers and Hot Air Furnaces heat quickly.

Prices of Square, Rectangular and Round "STANDARD" Burners quoted upon receipt of request and size of fire box, inside measurements, name, make and serial number of Boiler, length and breadth of ash pit door opening.



BRONZE AND BRONZING LIQUID

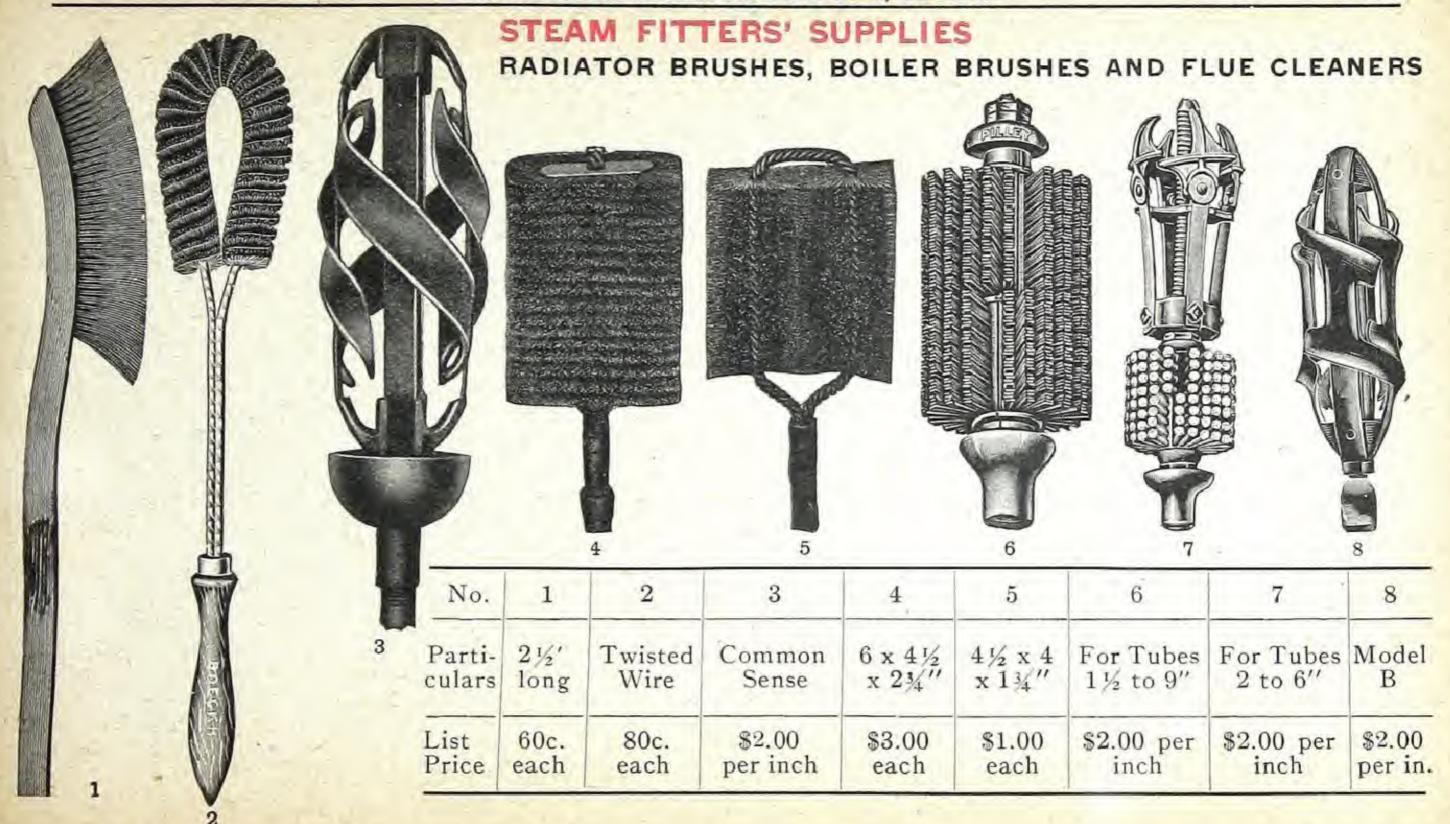
Brillia	nt Aluminump	er lb	. \$2.00	Brilliant Crimsonper	1b. §	\$1.50	Patent Light Blue per lb.	\$2.00
11	Pale Gold	"	1.25	Superior Pale Gold "		1.75	" Dark Blue "	2.00
11	Copper		1.50	Enamel Aluminum "		2.50	" Blue Violet "	2.00
11	Lemon	"	1.50	Patent Olive Green "		1.75	" Dark Green "	1.75
"	Orange	i.i.	1.50	" New Green "		1.75	Bronzing Liquid per gal.	2.50
11	Fire	11	1.50					

How to Apply Bronze Successfully to a Radiator

Following are rules laid down by one competent to instruct, regarding the method of applying bronze to steam or water radiators: it is advisable first to give the radiator a coat of primer. The majority of steam fitters, as a rule, use a yellow ochre. While this serves the purpose, at the same time it occupies considerable time in applying the same, and still more time is taken by the operator in waiting for this to dry. It is therefore recommended to use instead of ochre for this first coat, regular bronzing liquid, without the addition of any bronze powder. This will cover well the radiator, especially where there is dust or rusted parts. It will dry quickly and with a hard and glossy finish, and ordinarily, the steam fitter will find it much more convenient to use the liquid referred to.

When the liquid has become thoroughly dry, it will take but a few moments to mix the bronze powder with the bronzing liquid, in the proportion of $3\frac{1}{2}$ pounds bronze to 1 gallon liquid—that is in case of gold. Then apply in one direction only, with a soft brush—this is most important. Too often steam fitters use a stiff brush, overlooking the fact that bronze is nothing else but a very fine ground metal. A stiff brush scratches and ruins polish of bronze.

It is safe to follow the same method in the case of aluminum bronze, except that 1¼ pounds is sufficient to 1 gallon liquid, and one pound of aluminum bronze, it is estimated, should cover about 600 sq. ft. or more radiation, while one pound of gold, about 300 sq. ft., always allowing that one-third of the radiator, in the back, is not finished—that is, not bronzed at all.



"IRON" BOILER CEMENT

For mounting Hot Water and Steam Heaters and Stoves, or for Iron Joints exposed to temperature of 400° or under.

The finest article in the market. It is easily worked, will not drop out of joints while being mounted. Dries hard in the joints, yet keeps well in stock in cans or barrel.

Bakes hard under heat, and finally does not honeycomb or crumble in the joints.

FUSIBLE PLUGS

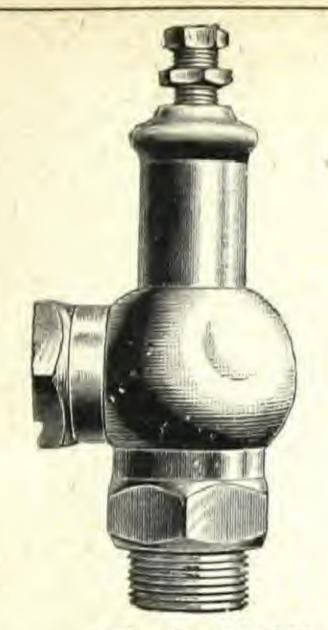


Short
One-Half Full Size

Fusible Plugs are made of steam metal filled with pure Banca tin and stamped to conform to the most rigid inspection.

Size, inches	1/2	3/4	1
Price Short	\$0.60	\$0.75	\$1.00
	1.20	1.50	2.00





RELIEF VALVE

Size.	12	34	1	134	11/2	2
List Price	\$3.75	\$5.63	\$7.50	\$9.38	\$11.25	\$15.00

Screwed inlet to 100 lbs.

STEAM FITTERS' SUPPLIES

SAFETY VALVES

Our low pressure pop safety valve is well proportioned and its construction includes all the features necessary to make it reliable and efficient. Regularly set at ten pounds.

Size, inches	34	1	111	117	
Finished body	\$ 8.00	\$10.00	\$12 00	\$15 00	
Size, inches	Iolyel	2	$2 k_2$	(X 1)	
Finished body		\$23.00	\$38 (0)		

IMPROVED SAFETY VALVES

Iron Body	Br	ass	Mounted
Size, inches	2	23	<u>6</u> 3
List, screwed or flanged	\$35.00	\$55	00 \$75.00

Pressure, 15 to 200 lbs.

Register Numbers; Ont., 738; Alta., 975; Sask., 2314.

Valves over 2" diam, have flanged inlet connections.



LO-PRESS SAFETY VALVES

Iron Body	Iron Body				
Size, inches	2	256	3	315	4
List, screwed or flanged.	35.00	55 00	\$ 75.00	90 00	3 110.00
Ont. Reg. No. Pressure, Ibs.	537	-537	537	537	

EXHAUST PIPE HEADS

Exhaust Pipe Inches Price each	2 and 2½ \$25.00	\$30.00	\$30.00	\$40.00	\$40.00
Exhaust Pipe Inches Price each	60.00	7 75.00	90.00	10 125.00	12 150.00

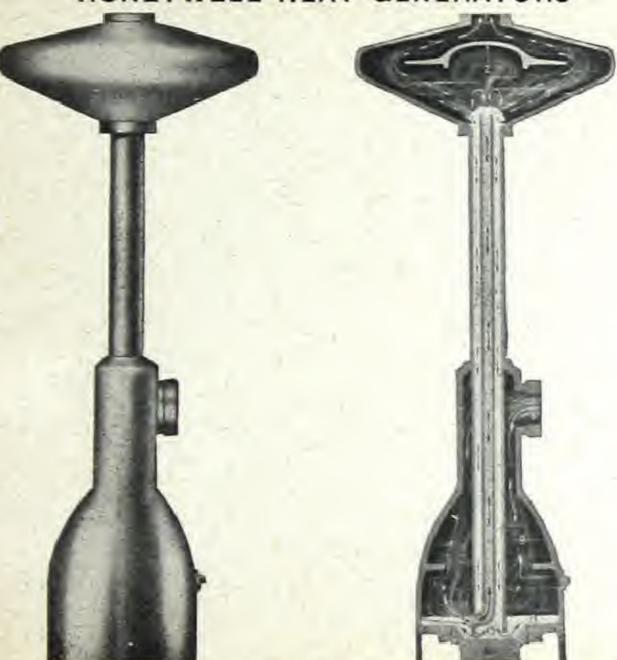
VERTICAL AND HORIZONTAL OIL SEPARATORS

SizeInches PriceEach		\$28.00	\$34.00	\$42.00	\$50.00	\$58.00	\$68.00
SizeInches	5	6	7	8	9	10	
PriceEach	76.00	98.00	116.00	134.00	152.00	170.00	

MORRISON LOW PRESSURE WATER FEEDER

Price......\$25.00

HONEYWELL HEAT GENERATORS



General view.

Sectional view, showing mercury seal

For Hot-Water Heating Outfits

When a Honeywell Heat Generator is properly connected up to a hot-water heating system, it seals it and permits the generation of a pressure varying from 0 lb. to 10 lbs. When a pressure of 10 lbs. is raised, the mercury seal within it is opened and the pressure automatically released.

The Honeywell Heat Generator thus insures a higher temperature and a consequent quickened circulation, permits the use of smaller pipes and about 10% less radiation. The principal results obtained by its use are:

First-Lower first cost.

Second-Wider range of temperatures.

Third—Economy in fuel.

Fourth—An improvement in an otherwise sluggish circulation.

Fifth-Increasing the efficiency of jobs already installed.

DATA AND LIST PRICES

No.	No. sq. ft. taken care of	Nom. Weight Mercury 1bs.	Approx. weight crated	Total weight inches	Height bottom to centre of pipe opening	Extreme width	List price
1 2 3 4	1,200 2,500 4,500 10,000	61/2	42 52 62 72	28½ 29¼ 30½ 30½	$12\frac{1}{2}$ $12\frac{1}{2}$ 12 12	8½ 9 12½ 12½	\$25.00 35.00 50.00 65.00

THE CLARK TEMPERATURE BOOSTER

The CLARK TEMPERATURE BOOSTER is a device which increases the circulation of the water, in hot water heating systems, by putting a pressure on the system, thereby causing the water to travel more rapidly to and from the boiler to the radiators, thus causing the water to be more hot and to maintain that constant heat.

The Clark Temperature Booster is a brass cylindrical case, tapped for one inch pipe connections and larger and reinforced at the tappings for additional strength. It is connected by this means to the expansion tank and to the system. Within this case is a valve which is weighted sufficiently for the amount of radiation it is designed to carry. The weighted valve has a brass seat as well as a brass bearing, being placed in the opening at the bottom of the case.

The brass by-pass cage is removable by simply taking out the threaded plug at the bottom of the by-pass. This provides an effective method of freeing the valve of sediment or dirt at any time.

The top shaped check valve and its seat are removable from the brass by-pass and its cage.

The top shaped check valve has a slotted head for the purpose of re-grinding the seat of this valve if it is found necessary to do so.

It has the most simple mechanism of any valve on the market,

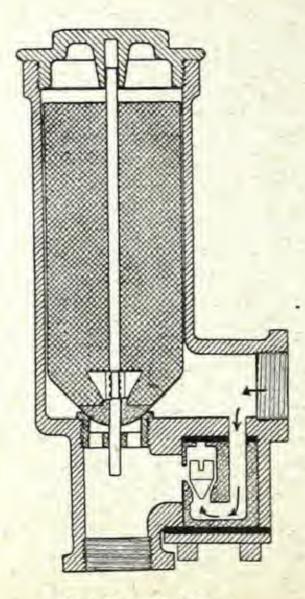
all the parts being instantly accessible.

In designing a new system to operate under the Clark Temperature Booster, figure the radiation the same as for gravity jobs or open tank systems, then deduct ten per cent. from the radiation, and use the pipe one size smaller throughout, leaving the boiler capacity the same as for a gravity system.

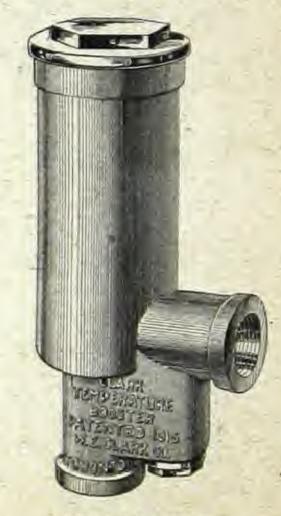
Dimensions and Prices

No	A1	B1
Diameter, over all	41/2"	51/2"
Inlet and OutletsPrice	\$20.00	\$25.00

Al to be installed near expansion tank, Bl in basement.

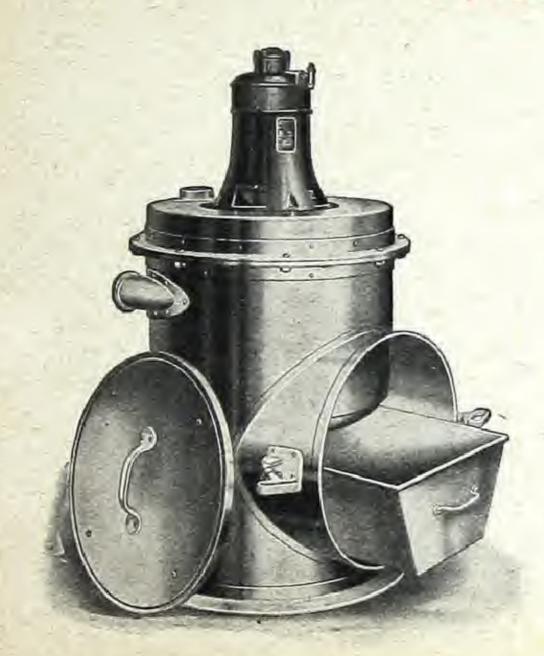


Sectional View



Outside View





SPENCER TURBINE CLEANERS

To insure healthy surroundings, dust and dirt must be removed without spreading any part of it.

Where the Spencer Home Cleaner is installed all the dirt is sucked out through a tube and no foul exhaust air or any part of the dust is discharged back into the rooms.

There is nothing to handle in your rooms but the hose and cleaning tool.

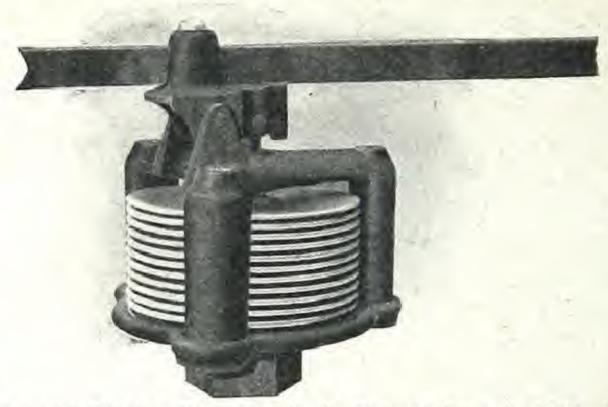
All the machinery is in the basement where it is moved or handled, and is, therefore, not skimped in size, weight or efficiency; hence supplies a strong, even vacuum so well controlled as to avoid all possibility of injury to rugs or fabric and removes all dust and grit from cracks or pores of bare floors.

The cut represents the Spencer Home Cleaner which has met with such universal favor and commendation. This machine exemplifies the same high grade construction, exclusive features, and correct principles which have characterized the larger Spencer machines, and sells at a price which places it within the reach of the average home.

The Spencer machine, in larger sizes, meets every requirement for all classes of buildings and is found in many of the finest buildings throughout the United States and Canada.

Complete illustrated catalogue furnished on request.

SYLPHON DAMPER REGULATOR No. 22 For Steam Boilers



(Protected by American and Foreign Patents. U. S. Patents June 2, 1903; June 16, 1903; May 24, 1904, and other applications pending).

It is composed entirely of metal, is frictionless; is sensitive to the last degree; is positive and invariable in its action, and will not deteriorate with age. The simplicity of its construction will be seen in the engraving.

No. 22—List price......each \$20.00

HEAT REGULATORS Minneapolis and Jewel

Complete,	with Clock Attachment	.\$35.00
Complete,	without Clock Attachment	. 30.00

ASBESTOS CEMENT REQUIRED TO COVER THE FOLLOWING BOILERS

To the Thickness of 11/4 inch

MOGUL ROUND HOT-WATER BOILERS

No	1	11/2	2	21/2	3	31/2	4	41/2	5	51/2	6	61/2	7	7½	8	9
Amount in pounds	125	150	150	175	175	200	200	225	250	275	300	325	350	375	400	450

SAFFORD ROUND STEAM BOILERS

No	4-19-S	5-19-S	6-19-S	4-22-S	5-22-S	6-22-S	4-25-S	5-25-S	6-25-S	4-28-S	5-28-S	6-28-S	4-31-S	5-31-S	6-31-S	4-34-S	5-34-S	6-34-S
Amount in pounds	125	150	175	150	175	200	200	225	250	250	275	300	325	350	375	400	450	500

SAFFORD TRIUMPH MOGUL WATER HEATERS

No	T-00	T-0	T-101	T-10	T-12	T-20	T-22	T-30	T-32
Amount in pounds	25	40	50	50	75	100	125	150	175

See directions for applying Boiler Covering, page 268.

SAFFORD SQUARE POT HOT-WATER AND STEAM BOILERS

No	370-3	371-3	370-4	371-4	370-5	371-5	370-6	371-6	370-7	371-7	370-8	371-8
Amount in pounds	250	275	300	325	350	375	400	425	450	475	500	525
No		370-9 550	371–9 575	370-10 600	371–10 625	370-11 650	371–11 675	370–12 700	371-12 725	370-13 750	371-13 775	370-14 800

SAFFORD SECTIONAL HOT-WATER AND STEAM BOILERS

Diam. Grate		15"			19"			22"		-	25	"			28	"				36"					48"		
No. Sections.	4	5	6	5	6	7	5	6	7	5	6	7	8	5	6	7	8	5	6	7	8	9	6	7	8	9	10
Amount in lbs.	100	125	150	240	280	320	275	325	375	350	400	450	500	500	575	650	725	575	650	725	800	875	850	950	1050	1150	1250

SAFFORD MAGAZINE SELF-FEED DOWN-DRAFT BOILERS

Diam. Grate			26	7						31'	,							4	7"			
No. of Sections	4	5	6	7	8	9	4	5	6	7	8	9	10	11	5	6	7	8	9	10	11	12
Amount in pounds	200	225	250	275	300	325	400	440	480	520	560	600	640	680	650	700	750	800	850	900	950	1000

See directions for applying Boiler Covering, page 268.

COVERING

The Safford-Kewanee Portable Boilers

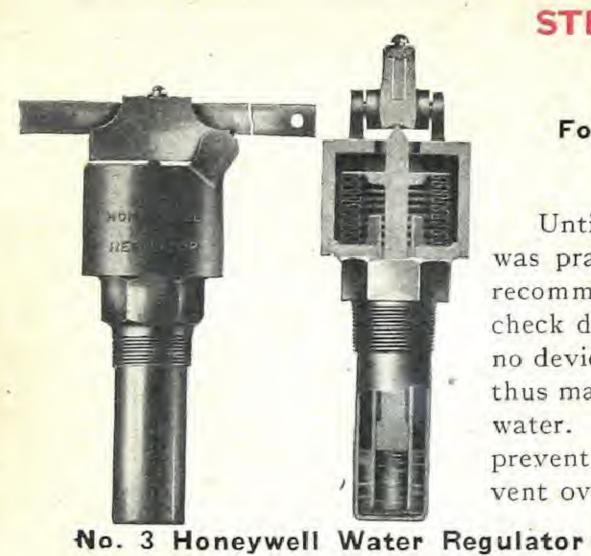
PORTABLE FIREBOX

No	0000	000	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420
Cost of Material	20.00	22.00	26.00	28.00	30,00	32.00	36.00	42.00	46.00	52.00	60.00	62.00	70.00	74.00	76.00	88.00	100.00	112 00	116,00	124.00	126.00	138.00

PORTABLE SMOKELESS

No	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322
Cost of Material	40.00	42.00	45.00	47.00	49.00	53.00	59.00	63.00	69.00	74.00	85.00	88.00	102.00	106.00	110.00	112.00	116.00	132.00	134.00	144.00	148.00	160.00

The above costs of material for covering Safford-Kewanee Portable Boilers are subject to discount. See directions for applying Boiler Covering, page 268.



WATER REGULATORS

For Hot-Water Boilers or Tank Heaters

Until this device was brought out, there was practically nothing made that could be recommended for regulating the draft and check dampers of a water boiler. There was no device to keep the fire burning evenly and thus maintain the desired temperature in the water. A regulator was needed which would prevent the water from boiling over and prevent overheating and fuel waste.



List Prices and Data

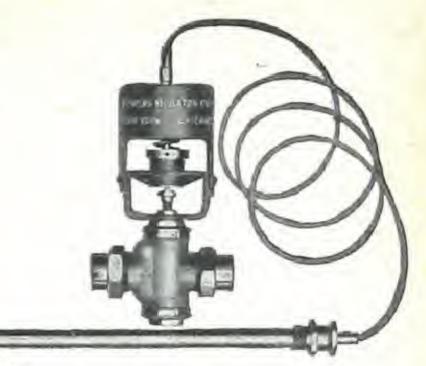
Sylphon Water Regulators

Name	No.	Height Inches	Width Inches	Size Thread Inches	Weight Lbs.	Water Temperatures	List Price
Honeywell	3 42 43 44	10 7 7 7	5 5 5	$1\frac{1}{2}$ $1\frac{1}{2}$ $1\frac{1}{2}$ $1\frac{1}{2}$ $1\frac{1}{2}$	35 35 35 35	120 to 180 160 to 220 190 to 240	\$20.00 25.00 25.00 25.00

POWERS TANK REGULATOR

While especially designed for steam heated hot water service tanks, its extreme sensitiveness and accuracy make it applicable to all places where even temperatures are essential, such as pasteurizers, cooking apparatus, processing vats, dry kilns, vulcanizing machines, canning factories, sugar refineries, etc., etc.

Regulator will be set at 160 degrees with adjustability 20 degrees above and below, unless otherwise ordered. Other operating temperatures, if desired. Always give valve size when ordering.



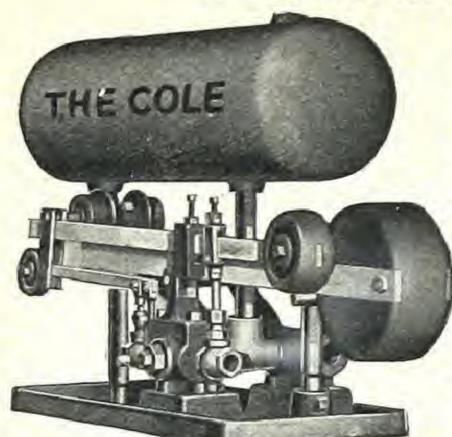
Valves 1/2" to 11/2", Brass. Over 11/2", Iron

List Prices and Data

Steam Valve Size Inches	Length of Stem Inches	Sizes of Tapping Required, Ins	Shipping Weight Lbs.	List Price	Steam Valve Size Inches	Length of Stem Inches	Sizes of Tapping Required, Ins	Shipping Weight Lbs.	List Price
1/2 3/4 1 11/4 11/2 2 21/2	20 20 20 20 20 20 20 20 20	1 1 1 1 1 1 1 1	36 38 40 41 42 55 72	\$60.00 65.00 70.00 75.00 80.00 90.00 95.00	3 3½ 4 5 6 8	20 20 20 24 24 24 24	1 1/4 1 1/4 1 1/4 1 1/4 1 1/4 1 1/4	108 125 140 160 190 330	\$100.00 110.00 120.00 260.00 350.00 480.00

DIRECT RETURN STEAM TRAP

Instructions for the Connecting Up of Single Trap Installation



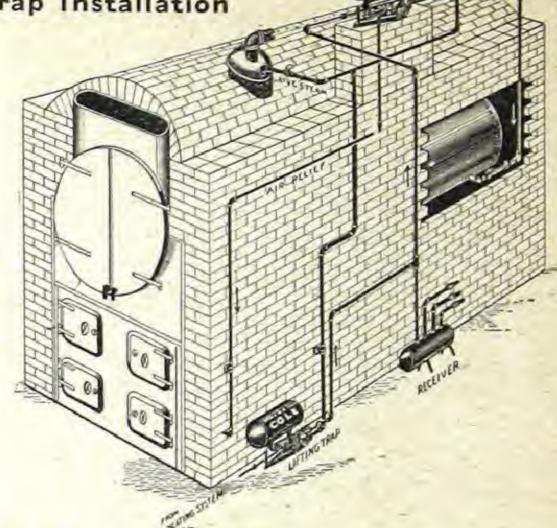
The Steam Trap with Self-Adjusting packing glands, (Packed on the Outside) Operating on Roller Bearings on a fixed Fulcrum which permits of full discharge at each operation.

Place Trap as near and 3 ft. to 4 ft. above water line of Boiler, and as few turns between Trap and Boiler, have good swing check valves, before entering Trap, also Boiler

A separate opening should be provided in Boiler for the steam connection, water can enter boiler through top or blow-off.

Connect air-relief to ash pit with a globe valve to control to suit conditions.

When used for high pressure work where many machines, dryers or cooking kettles, a receiver should be used, a swing check valve must be placed on each pipe entering Receiver.

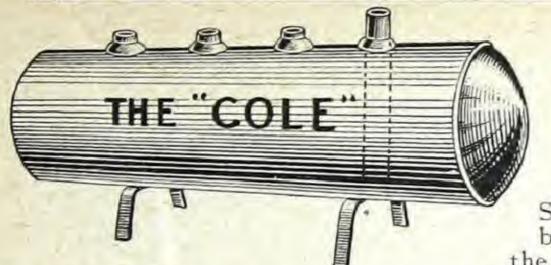


Price List of Boiler Feeders, Lifting Return, Vacuum and Condenser Steam Traps

Number	Size of	f Pipes	Water per	Direct Radiation	Lineal Foot	Boiler	
Number -	Steam	Water	hour in lbs.	in Sq. Ft.	1 inch Pipe	H. P.	List Price
1 2 3 4 5 6 7	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 2 2 2 1 ₂	720 1400 2400 4320 6720 10200 18000	2160 4320 7200 12960 20160 30600 54000	6480 13960 21600 38880 60480 91800 162000	24 48 80 144 224 340 600	\$ 50.00 60.00 75.00 120.00 165.00 225.00

Note—These capacities are based on sixty operations per hour with a pressure equal to ten pounds per square inch at inlet. Horse-power based on thirty pounds water per hour.

For Lumber Kilns, Greenhouses divide by two, for Laundries and Brick Dryers divide by three, for Blower and Fanstacks divide by five.



THE "COLE" RECEIVER

In most Return Trap installations it is necessary to place a Receiving Chamber below all Drip Pipes so that Returns can accumulate while Trap is discharging.

No. 1 Receiver has capacity for

Traps Nos. 1 and 2.

No. 2 Receiver has capacity for Traps Nos. 3 and 4.

No. 3 Receiver has capacity for Traps Nos. 5, 6 and 7.

Price List of "COLE" Receivers

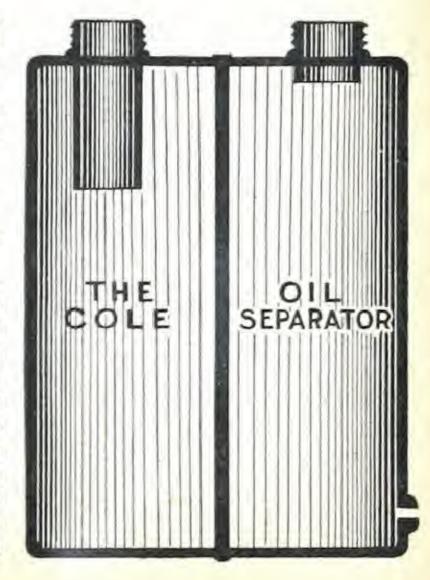
	Size	Price
No. 1	6"x22"	\$10.00
No. 2	10"x24"	15.00
No. 3	12"x36"	25.00

STEAM FITTERS' SUPPLIES

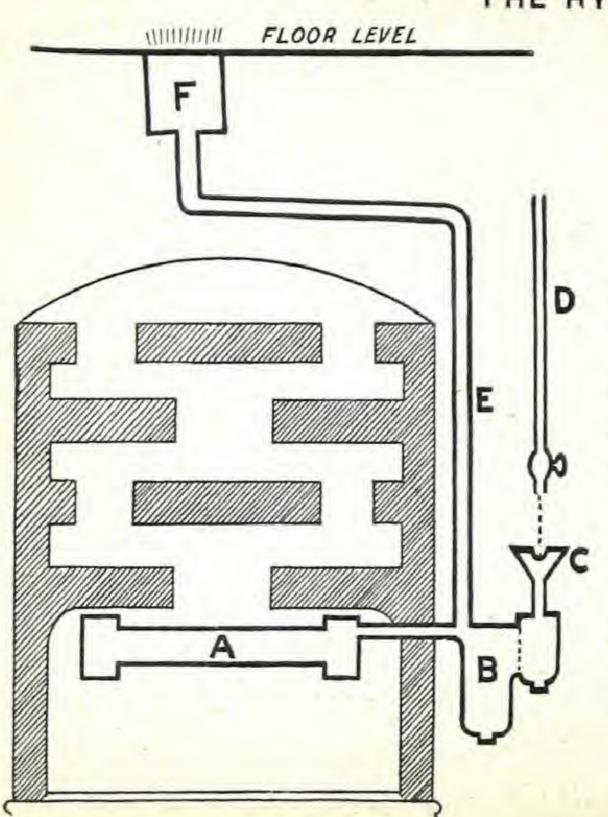
THE "COLE" OIL SEPARATOR

Separates the oil where others fail because it is built large enough. When the steam is allowed to expand, the oil will adhere to the water in the bottom. It cannot escape with the steam because it follows natural laws. Built to last and give the best satisfaction, as do our other products.

Price	Height inches	Diameter inches	Size of Exhaust Pipe, ins.
\$20.00	16	12	2
25.00	18	14	21/2
30.00	20	16	$\frac{21/2}{3}$
35.00	24	18	31/2
40.00	30	24	4
45.00	30	28	41/2
50.00	36	30	4 ½ 5
60.00	36	36	6
75.00	40	36	7
90.00	48	40	8
125.00	48	48	10



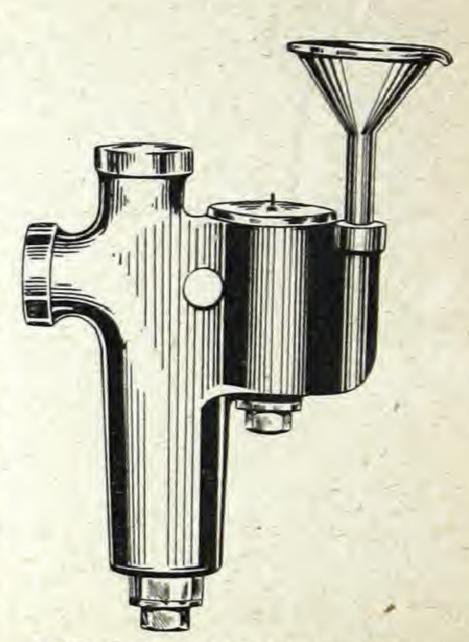
THE HYGE-DONOR HUMIDIFYER



- A Retort in Furnace
- B The Vaporizing Chamber
- C Drip Funnel for Water Supply
- D Water Supply Pipe
- E Steam Pipe to Floor Grating
- F Floor Grating

The Hyge-Donor Humidifyer. This apparatus, as shown in accompanying illustration, is attached directly to heating furnace (Hot Water, Hot Air or Steam Furnaces) having retort placed in firepot in such a position that it does not interfere in any way with the feeding of coal. Connected to retort on outside of furnace is the Humidifyer. The water supply is fed into Humidifyer at C, and passing into retort returns as vapor and flows through pipe E to floor grating F. This floor grating can be located anywhere on ground floor of house, but preferably in the hallway, thus enabling the moisture to circulate throughout whole building. Tests made in residences where Hyge-Donor Humidifyers have been installed show that the moisture will and does penetrate into every room from ground floor to attic.

List Price, \$40.00.

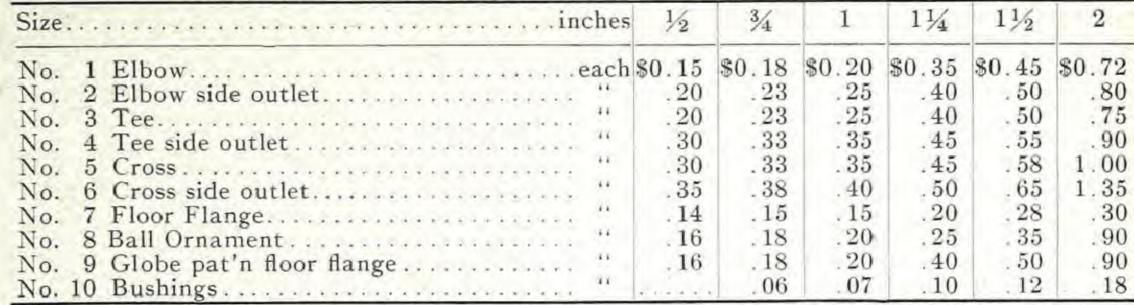


(Patented in the U.S. July 9th, 1907) (Patented in Canada June 11th, 1907)

MALLEABLE IRON RAILING FITTINGS



No. 1



All Fittings are threaded right hand, unless otherwise ordered. Add 20 per cent. for Fittings threaded R. and L., or L. hand. Galvanized Fittings at double the above lists.



No. 2



No. 7



No. 9



No. 3



No. 4



No. 5



No. 6



No. 8



No. 10

Entirely Open Partly Open

Easily adjusted to any permanent position within its range of length. Has no screws, slots or springs to get out of order. Galvanized iron with neat cast iron flange on each end.

STEAM FITTERS' SUPPLIES

TELESCOPING FIRE-PROOF FLOOR SLEEVES

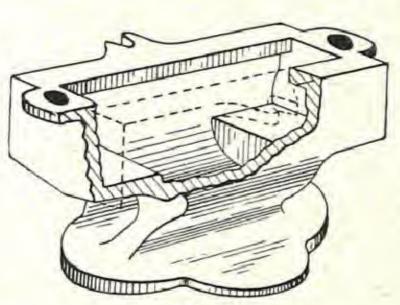
List Prices and Data

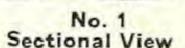
Size of Pipeins.		1	11/4	11/2	2	21/2	3	31/2	4	5	6	8
Minimum Length.ins.	94	14	14	14	14	14	14	14	14	14	14	14
Maximum Length,ins.		24	24	24	24	24	24	24	24	24	24	24
Priceeach		\$1,20	\$1.35	\$1.50	31.80	\$2,10	\$2.50	\$3.00	\$3.75	\$4.50	\$5.25	\$6.75

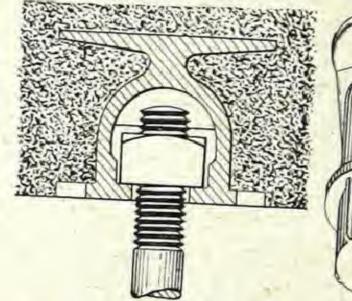
CONCRETE INSERTS



Closed



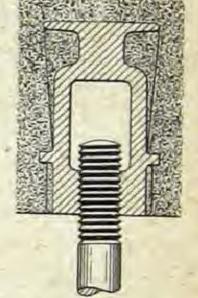




No. 1 Installed View



No. 2 General View



No. 2 Sectional View

List Prices and Data of Concrete Inserts

37 01	The same of						
No. Size of Bolt:	3/8	7 16	1/2	9 16	5/8	3/4	7/8
No. 1 No. 2	16	16 16	16 16	24	28 28	36	4s

HEATING DATA

AND

USEFUL INFORMATION

Copied from Standard Authorities, while we do not guarantee it, we believe it to be reliable.

THE

DOMINION RADIATOR COMPANY

St. John Montreal Hamilton

TORONTO

Winnipeg Calgary

INSTRUCTIONS FOR APPLYING COVERING

On Safford-Kewanee Portable Boilers

Apply two thicknesses of I" Mineral Wool Blocks, or one thickness of I" Asbestos Sponge Felt, after

which is to be applied a 1/2" coat of Asbestos, the whole covered with canvas casing.

An easy method of applying the above is to form a loop around the boiler by ½" rope and a slip knot. Then place one ply of covering material inside this loop until the circle is complete, then tighten the rope until all the blocks are drawn firmly against the boiler. Wire the blocks with galvanized wire, using two strands for each row of blocks. Where using Mineral Wool blocks, repeat the above for the second ply of blocks. Be sure that all joints are broken. Put on a rough coat of Asbestos Cement, and then a finishing coat, and trowel smooth. Over this paste canvas jacket.

INSTRUCTIONS FOR APPLYING ASBESTOS CEMENT

To Boilers, Domes, Heaters, Etc.

The cement is usually applied in three coats one-half inch to three-quarter inch thick, regulated according to the total thickness required. The material is mixed with water in an ordinary box to a consistency of mortar and should be allowed to stand several hours before using. For applying, use an ordinary plasterer's trowel.

Apply the first coat about ½ inch thick to the boiler while it is warm, leaving the surface rough in order that the second coat may properly adhere. Stop back about 1 inch from all manholes, doors and other openings, and when putting on last coat, finish up the edges around all openings to a nice bevel.

After the first coat is thoroughly dry, the second coat may be applied in the same manner as the first,

leaving it rough for the reception of the next coat.

For the third coat mix Portland Cement with the Asbestos Cement, proportions half and half, and after

applying, smooth it down, a hard finish will result.

Note—The boiler should be kept quite hot during the application, as each coat should be thoroughly dry before proceeding with the next.

CLEANING STEAM BOILER IN SPRING

At the close of the heating season fill the Steam Boiler with water to the safety valve and let it thus stand through the summer. Disconnect smokepipe, thoroughly clean it, and store away in a dry place. Leave Boiler doors open. Clean all the inner surfaces, and at the opening of the next season withdraw the water and refill with fresh water to the water line, starting the Boiler as before. See that the cement between the sections is in place. If it has dropped out, have the joints tightly recemented.

CLEANING A WATER-GAUGE GLASS

Without Removing It

- 1. Draw a cupful of hot water from the Boiler, into which pour at least a tablespoon of raw muriatic or other acid.
 - 2. Close both water-gauge valves.
- 3. Open top water-gauge valve and also pet cock at bottom, and blow water out of the glass. Then immediately close the top valve and submerge the end of the pet cock in cup of hot-water solution. A vacuum is at once created in the gauge glass which causes the solution in the cup to rush in.
- 4. Keep the pet cock immersed and operate the top valve, slightly opening and closing, alternately expelling and drawing in the solution until all grease, oil, or other matter adhering to the inside of the glass is cut out. Then close pet cock and open both water-gauge valves.

It is necessary to have one pound pressure of steam or more on the Boiler before commencing this operation, which need not occupy more than ten minutes. The result is a clean glass without the risk of breakage and probable renewal of gaskets, which is frequently the case when removing the glass for cleaning.

TO ASCERTAIN HORSEPOWER OF BOILERS

Standard adopted by American Society of Mechanical Engineers is 30 pounds of water evaporated into

dry steam per hour from temperature of feed water 100° Fahrenheit, into steam of 70 pounds pressure.

In calculating horsepower of Tubular Boilers consider 15 square feet of heating surface equivalent to one nominal horsepower and 8 to 10 square feet of heating surface of internal fired boilers equivalent to one nominal horse power.

Each nominal horsepower of boilers requires one cubic foot of feed water per hour.

Consumption of fuel averages 7½ pounds of coal or 15 pounds dry pine wood for every cubic foot of water evaporated.

Steam Memoranda

A cubic inch of water evaporated under ordinary atmosphere pressure is converted into one cubic foot of steam (approximately).

The specific gravity of steam (at atmospheric pressure) is .411 that of air at 34° Fahrenheit, and .0006

that of water at same temperature.

27.222 cubic feet of steam weigh one pound; 13.817 cubic feet of air weigh one pound.

Locomotives average a consumption of 3,000 gallons of water per 100 miles run.

The best designed power boilers, well set, with good draft, and skillful firing, will evaporate from 7 to 10 pounds of water per pound of first-class coal.

On one square foot of grate can be burned on an average from 10 to 12 pounds of hard coal, or 18 to 20 pounds of soft coal per hour, with natural draft. With forced draft nearly double these amounts can be burned.

A standard boiler horsepower is the evaporation of 30 pounds of water per hour from a feed water temperature of 100 degrees Fahr, into steam at 70 pounds gauge pressure.

To ascertain heating surface in tubular boilers multiply two-thirds the circumference of boiler by length

of boiler in inches and add to it the area of the tubes + (3 tube sheets—area of tubes).

1 square foot of boiler heating surface will supply from 7 to 10 square feet of radiating surface. Each horsepower of the boiler will supply from 240 to 360 feet of 1-inch steam pipe, or 80 to 120 square feet of radiating surface.

BLOWING OFF A STEAM BOILER

A Steam Boiler should be blown off after it is ready for operation, (and before being taken over by owners), to remove the unavoidable accumulation of oil, grease, etc., that have a tendency to cause a boiler to foam, preventing the generation of steam and causing an unsteady water line. This can only be done when the boiler is under pressure. If one blowing off does not result in a steady water line and clean gauge, the operation must be repeated a second, or, if necessary, a third and fourth time.

- 1. Close all radiator valves, or, if the mains are valved, close both flow and return valves tightly, and also close the cock below the diaphragm regulator on boiler.
- With a wood fire and boiler filled to centre of water glass, get up a pressure of not less than 10 to 12 pounds by the steam gauge.
- 3. Open the blow-off cock, being careful that a large fire is carried to maintain a pressure until the last drop of water is blown out.
 - 4. Draw any remaining fire and open all fire and draft doors wide.
- 5. Allow the boiler to cool down, which will usually take from one-half to one hour, then close the steam cock and slowly fill boiler to water line.
 - 6. Open all valves on flow and return lines, also diaphragm cock, and also the radiator valves.
 - 7. Rebuild fire.
 - 8. Repeat the operation until there is a steady water line and a clean gauge glass.

NOMINAL WEIGHT OF A LINEAL FOOT OF CAST IRON PIPE, WITHOUT FLANGES

Bore				Thickness	of Metal in In	ches			
in Inches	1/4	3/8	. 1/2	5/8	3/4	7/8	1	11/8	11/4
2 2½ 3 3½ 4	1bs. 5.52 6.75 7.93 9.20 10.43	lbs. 8.74 10.58 12.43 14.27 16.11	lbs. 12.27 14.73 17.18 19.64 22.09	lbs. 16.11 19.18 22.24 25.31 28.38	lbs. 20.25 23.95 27.61 31.29 34.98	1bs. 24.70 28.99 32.29 37.58 41.88	lbs. 29.45 34.36 39.27 44.18 49.09	lbs. 34.52 40.04 45.56 51.08 56.60	lbs. 39.88 46.02 52.16 58.29 64.43
4½ 5 5½ 6 7	11.66 12.89 14.11 15.34 17.79	17.95 19.79 21.63 23.47 27.15	24.54 27.00 29.45 31.91 36.82	31.45 34.52 37.58 40.65 46.79	38.66 42.34 46.02 49.70 57.06	46.18 50.47 54.76 59.06 67.65	54.00 58.91 63.81 68.72 78.54	62.13 67.65 73.17 78.69 89.74	70.56 76.70 82.84 88.97 101.24
8 9 10 11 12	20.25 22.70 25.16 27.61 30.07	30.83 34.52 38.20 41.88 46.56	41.72 46.63 51.54 56.45 61.36	52.92 59.06 65.19 71.33 77.47	64.43 71.79 79.15 86.52 93.88	76.24 84.83 93.42 102.01 110.60	88.36 98.18 107.99 117.81 127.63	100.78 111.83 122.87 133.92 144.96	113.52 125.79 138.06 150.33 162.60
13 14 15 16 18	32.52 34.98	49.24 52.92 56.60 60.29 67.65	66.27 71.18 76.09 80.99 90.81	83.60 89.74 95.87 102.01 114.28	101.24 108.61 115.97 123.33 138.06	119.19 127.78 136.37 144.96 162.14	137.45 147.26 157.08 166.90 186.53	156.01 167.05 178.10 189.14 211.23	174.87 187.15 199.42 211.69 236.23
20 22 24			100.63 110.45 120.26	126.55 138.83 151.10	152.79 167.51 182.24	179.32 196.50 213.68	206.17 225.80 245.44	233.32 255.41 277.50	260.78 285.32 309.87

Note-For each flanged joint add a foot in length of the pipe.

PROPERTIES OF SATURATED STEAM AND TEMPERATURE DUE TO PRESSURE

Boiling Temp.	Absolute Press. the sq. in.	Inches Vacuum	Steam Gauge Press. lbs.	Latent Heat	Heat Liquid	Vol. 1 lb. Steam cu. ft.		Absolute Press. the sq. in.	Inches Vacuum	Steam Gauge Press. lbs.	Latent Heat	Heat Liquid	Vol. 1 II Steam cu. ft.
157 161 165 169 172	4.408 4.851 5.333 5.855 6.273	20.94 20.04 19.06 18.00 17.15		1003.4 1001.6 998.7 996.4 994.6	124.86 127.86 132.86 136.86 139.87	82.6 77.2 69.1 63.3 59.4	212 215 217 219 222	14.70 15.60 16.22 16.86 17.87		0.00 1.72 2.16 3.17	970.4 968.4 967.2 965.9 963.9	180.00 183.00 185.00 187.10 190.10	26.79 25.35 24.44 23.57 22.34
176 179 182 185 187	6.867 7.344 7.85 8.38 8.76	15,94 14,97 13,94 12,85 12,09) Y (* · · · · · · · · · · · · · · · · · ·	992.3 990.5 988.7 986.9 985.7	143.87 146.88 149.89 152.89 154.90	54.5 51.2 48.12 45.25 43.45	225 227 230 232 235	18.91 19.64 20.77 21.56 22.79	****	4.21 4.94 6.07 6.86 8.09	962.0 960.7 958.7 957.4 955.4	193.10 195.20 198.20 200.20 203.2	21.17 20.44 19.39 18.72 17.78
190 192 194 197 199	9.34 9.74 10.17 10.83 11.29	10.90 10.09 9.21 7.87 6.93		983.9 982.7 981.5 979.7 978.8	157.91 159.91 161.92 164.93 166.94	40.91 39.31 37.78 35.62 34.26	237 240 242 244 246	23.64 24.97 25.88 26.83 27.80	7287 	8.94 10.27 11.18 12.13 13.10	954.1 952.1 950.7 949.4 948.0	205.3 208.3 210.3 212.4 214.4	17.17 16.32 15.78 15.26 14.76
201 203 205 207 209 210	11.76 12.26 12.77 13.30 13.85 14.13	5.97 4.96 3.92 2.84 1.73 1.16	****	977.2 976.0 974.7 973.5 972.2 971.6	168.94 170.95 172.96 174.97 176.98 177.99	32.96 31.72 30.53 29.39 28.32 27.80	248 250 252 255 257 259	28.80 29.82 30.88 32.53 33.66 34.83	****	14.10 15.12 16.18 17.83 18.96 20.13	946.7 945.3 943.9 941.9 940.5 939.1	216.4 218.5 220.5 223.5 225.6 227.6	14. 28 13. 82 13. 37 12. 74 12. 34 11. 95

AREAS OF CIRCLES

Diameter Inches	Area	Diameter Inches	Area	Diameter Inches	Area	Diameter Inches	Area
1/8	.012	7	38.48	19 -	283.53	37	1075.2
	. 049	71/2	44.17	$19\frac{1}{2}$	298.64	38	1134.1
3/8	.110	8	50.26	20	314.16	39	1194.6
1/4 3/8 1/2 3/4	. 196	81/2	56.74	$20\frac{1}{2}$	330.06	40	1256.6
3/4	.441	9	63.61	21	346.36	41	1320.2
1	.785	91/2	70.88	$21\frac{1}{2}$	363.05	42	1385.4
11/8	.994	10	78.54	22	380.13	43	1452.2
$1\frac{1}{8}$ $1\frac{1}{4}$ $1\frac{1}{2}$	1.227	$10\frac{1}{2}$	86.59	$22\frac{1}{2}$	397.60	44	1520.5
11/2	1.767	11	95.03	23	415.47	45	1590.4
13/4	2.405	$11\frac{1}{2}$	103.87	231/2	433.73	46	1661.9
$ \begin{array}{c} 2 \\ 2 \frac{1}{4} \\ 2 \frac{1}{2} \\ 2 \frac{3}{4} \end{array} $	3.141	12	113.10	24	452.39	47	1734.9
21/4	3.976	$12\frac{1}{2}$	122.71	$24\frac{1}{2}$	471.43	48	1808.5
21/2	4.908	13	132.73	25	490.8	49	1885.7
23/4	5.939	$13\frac{1}{2}$	143.13	26	530.9	50	1963.5
3	7.06	14	153.94	27	572.5	51	2042.8
31/4	8.29	$14\frac{1}{2}$	165.13	28	615.7	52	2123.7
3 3½ 3½ 3½	9.62	15	176.71	29	660.5	53	2206.1
33/4	11.04	151/2	188.69	30	706.8	54	2290.2
4	12.56	16	201.06	31	754.7	55	2375.8
4 4 1/2	15.90	$16\frac{1}{2}$	213.82	32	804.2	56	2463.0
5	19.63	17	226.98	33	855.3	57	2551.7
51/2	23.75	171/2	240.52	34	907.9	58	2642.0
5 5½ 6	28.27	18	254.46	35	962.1	59	2733.9
61/2	33.18	181/2	268.80	36	1017.8	60	2827.4

CIRCUMFERENCE OF CIRCLES

Diam.	Circum- ference	Diam.	Circum- ference	Diam.	Circum- ference	Diam.	Circum- ference	Diam.	Circum- ference	Diam.	Circum- ference
1/8/4/8 1/8/4/8 1/8/4/8 1/4/8 1/4/8 1/4/8 1/4/8 1/5/8	.3927 .7854 1.1781 1.5708 1.9635 2.3562 2.7489 3.1416 3.5343 3.9270 4.3197 4.7124 5.1051 5.4978 5.8905 6.2832 7.0686	2½ 2¾ 3¼ 3½ 3½ 3¾ 4 4½ 5 5½ 6 6½ 7 7½ 8 8½ 9	7.8540 8.6394 9.4248 10.210 10.996 11.781 12.566 14.137 15.708 17.279 18.850 20.420 21.991 23.562 25.133 26.704 28.274	9½ 10 10½ 11 11½ 12 12½ 13 13½ 14 14½ 15 15½ 16 16½ 17 17½	29.845 31.416 32.987 34.558 36.128 37.699 39.270 40.841 42.412 43.982 45.553 47.124 48.695 50.265 51.836 53.407 54.978	18 18½ 19 19½ 20 20½ 21 21½ 22 22½ 23½ 23½ 24 24 24½ 25 26 27	56.549 58.119 59.690 61.261 62.832 64.403 65.973 67.544 69.115 70.686 72.257 73.827 75.398 76.969 78.540 81.681 84.823	28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44	87.965 91.106 94.248 97.389 100.531 103.673 106.814 109.956 113.097 116.239 119.381 122.522 125.664 128.805 131.947 135.088 138.230	45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60	141.372 144.513 147.655 150.796 153.938 157.080 160.221 163.363 166.504 169.646 172.788 175.929 179.071 182.212 185.354 188.496

To find the circumference of a circle when diameter is given multiply the given diameter by 3.1416.

In feet per minute, through pipes of various sizes, for varying quantities of flow.

VELOCITY OF FLOW OF WATER PRESSURES AND BOILING POINTS OF WATER FOR GIVEN STATIC HEADS

Gallons per Minute	inch	1 inch	1¼ inch	1½ inch	2 inch	2½ inch	3 inch	4 inch	Height of Column, Feet	Pressure per Square Inch, Pounds	Boiling Point at Boiler which is at the Botton of the Column, Degrees Fahrenheit
5 10 15 20 25 30 35 40 45 50 75 100 125 150 175 200	218 436 653 872 1090		78 16 157 235 16 314 392 16 451 540 16 706 16 785 1177 16	1417	30½ 61 91½ 122 152¼ 183 213½ 244 274⅓ 305 457½ 610 762⅓ 915	1936 5836 78 9736 117 13636 156 17536 195 29236 380 48736 585 68236 780	13 1/2 27 40 1/2 54 67 1/2 81 94 1/2 108 121 1/2 135 202 1/2 270 337 1/2 405 472 1/2 540	151/3 23 303/8 381/3 46 532/3 611/3 69 762/3 115 1531/3	2 3 4 5 6 7 8 9 10 15 20 25 30 35 40 45 50	0.866 1.299 1.732 2.165 2.598 3.031 3.464 3.897 4.330 6.500 8.660 10.830 12.990 15.160 17.320 19.490 21.650	214 .9 216 .3 217 .6 219 .0 220 .3 221 .6 222 .8 224 .1 225 .3 231 .0 236 .2 241 .2 245 .7 249 .9 253 .8 257 .7

DIAMETER OF DRILLS REQUIRED FOR VARIOUS SIZES OF TAPS

Tap, inches	1/4	1/4	3%	14	34	1	114	11/2	2	21/2	3
Drill, inches	H	tt	45	H	11	14	1 55	1.44	2%	211	8/4

EQUALIZATION OF PIPE AREAS

Diam.		-	Nu	mber o	f Smalle	r Pipes	Equival	ent to Or	ne Larger	Pipe		
Pipes, Ins.	3/4 In.	1 In.	1½ In.	2 In.	3 In.	4 In.	5 In.	6 In.	7 In.	8 In.	9 In.	10 In.
1/2	2.27	4.88	15.8	31.7	96.9	205	377	620	918			
1/2 3/4	1	2.05	6.9	14	42.5	90.4	166	273	405	569	779	
1		1	3.5	6.8	20.9	44.1	81.1	133	198	278	380	536
11/2			1	1.3	6.1	13	23.8	39.2	58.1	81.7	112	157
2				1	3.1	6.5	11.9	19.6	29.0	40.8	55.8	78.5
21/2					1.8	3.87	7.1	11.7	17.4	24.4	33.4	47.0
3					1	2.12	3.9	6.4	9.5	13.3	20.9	23.7
4						1	1.8	3	4.5	6.3	8.6	12.1
5							1	1.6	2.4	3.4	4.7	6.6
6								1	1.5	2.1	2.8	4.0
7									1	1.4	1.9	2.7
8										1	1.3	1.9

* Nominal diameters standard steam and gas pipes.

Example—To find number of 2-inch pipes which will deliver as much fluid as one 5-inch pipe: In column headed 5, and opposite 2 read 11.9 which is the equivalent number of 2-inch pipes.

EQUATION OF PIPES

To reduce pipes of different sizes to their equivalent in 1 inch, following factors are sufficiently accurate for ordinary purposes.

11/4 in.	1½ in.	2 in.	$2\frac{1}{2}$ in.	3 in.	3½ in.	4 in.	41/2 in.	5 in.	6 in.	7 in.	8 in.
X	X	X	X	X	X	X	X	X	X	x	X
1.26	1.44	1.81	2.19	2.66	3.04	3.42	3.80	4.23		5.80	6.55

GALVANIZED SHEET IRON

Sizes and Weights

Gauge	Size	Ounces per Sq. Ft.	Weight of Sheet in lbs.	Gauge	Size	Ounces per Sq. Ft.	Weight of Sheet in lbs.	Gauge	Size	Ounces per Sq. Ft.	Weight of Sheet in lbs.	Gauge	Size	Ounces per Sq. Ft.	Weight of Sheet in lbs.
14 14 14 14 16	24x84 26x84 28x84 30x84 24x84	52½ 52½ 52½ 52½ 52½ 42½	46 49¼ 53¾ 57½ 37	20 20 20 20 20 20	28x84 30x84 36x84 24x96 26x96	26½ 26½ 26½ 26½ 26½ 26½	27 29 34¾ 26⅓ 28¾	23 23 23 23 23 23	36x84 40x84 24x96 26x96 28x96	20½ 20½ 20½ 20½ 20½ 20½ 20½	27 20 20½ 20½ 22¼ 24	26 26 26 26 26 26	24x84 26x84 28x84 30x84 32x84	14½ 14½ 14½ 14½ 14½ 14½	12 ⁸ / ₄ 13 ³ / ₄ 14 ³ / ₄ 16 17
16 16 16 16 16	26x84 28x84 30x84 24x96 26x96	$42\frac{1}{2}$ $42\frac{1}{2}$ $42\frac{1}{2}$ $42\frac{1}{2}$ $42\frac{1}{2}$ $42\frac{1}{2}$	4014 431/2 461/2 421/3 46	20 20 20 20 22 22	28x96 30x96 36x96 24x84 26x84	26½ 26½ 26½ 26½ 22½ 22½	31 33 42 19 ³ / ₄ 21 ¹ / ₄	23 23 23 23 23 23	30x96 32x96 36x96 40x96 44x96	20½ 20½ 20½ 20½ 20½ 20½	25¾ 27½ 31 34⅓ 37¾	26 26 26 26 26 26	36x84 24x96 26x96 28x96 30x96	14½ 14½ 14½ 14½ 14½ 14½	19 14¼ 15¾ 17 18¼
16 16 18 18 18	28x96 30x96 24x84 26x84 28x84	42½ 42½ 34½ 34½ 34½ 34½	49¾ 53 30¼ 32 35¼	22 22 22 22 22 22	28x84 30x84 36x84 40x84 24x96	22½ 22½ 22½ 22½ 22½ 22½	23 24½ 29½ 33 22	24 24 24 24 24 24	24x84 26x84 28x84 30x84 32x84	18½ 18½ 18½ 18½ 18½ 18½	16¼ 17 19 20¼ 22	26 26 28 28 28 28	32x96 36x96 24x84 26x84 28x84	14½ 14½ 12½ 12½ 12½ 12½	$19\frac{1}{2}$ $21\frac{3}{4}$ 11 $11\frac{3}{4}$ $12\frac{3}{4}$
18 18 18 18 18	30x84 36x84 24x96 26x96 28x96	$34\frac{1}{2}$ $34\frac{1}{2}$ $34\frac{1}{2}$ $34\frac{1}{2}$ $34\frac{1}{2}$ $34\frac{1}{2}$	37¾ 45¼ 34¾ 36½ 40⅓	22 22 22 22 22 22	26x96 28x96 30x96 36x96 40x96	22½ 22½ 22½ 22½ 22½ 22½	241/4 261/3 28 332/3 373/4	24 24 24 24 24 24	36x84 40x84 24x96 26x96 28x96	18½ 18½ 18½ 18½ 18½ 18½	24 27 18½ 20 21¾	28 28 28 28 28 28	30x84 32x84 36x84 24x96 26x96	12½ 12½ 12½ 12½ 12½ 12½ 12½	13¾ 14½ 16¼ 12¾ 13½
18 18 19 20 20	30x96 36x96 28x84 24x84 26x84	$34\frac{1}{2}$ $34\frac{1}{2}$ $30\frac{1}{2}$ $26\frac{1}{2}$ $26\frac{1}{2}$	42¼ 51¾ 31 23 25	23 23 23 23 23 23	24x84 26x84 28x84 30x84 32x84	20½ 20½ 20½ 20½ 20½ 20½	18 19½ 21 22½ 24	24 24 24 24 24 24	30x96 32x96 36x96 40x96 44x96	18½ 18½ 18½ 18½ 18½ 18½	23 24 ⁸ / ₄ 27 ⁸ / ₄ 31 34	28 28 28 28	28x96 30x96 32x96 36x96	$\begin{array}{c} 12\frac{1}{2} \\ 12\frac{1}{2} \\ 12\frac{1}{2} \\ 12\frac{1}{2} \\ 12\frac{1}{2} \end{array}$	14½ 15½ 16½ 16½ 18½

SPECIFIC GRAVITY OF BODIES

Body	Specific Gravity	Weight per cu. ft. in pounds
Water	1.00	62.5
Aluminum	2.50	156.3
Tin (cast)	7.29	455.6
Steel	7.84	490.0
Cast Iron	7.21	450.6
Wrought Iron	7.68	480.0
Brass	8.38	523.8
Copper	8.79	549.4
Lead (cast)	11.35	709.4
Mercury	13.60	850.0
Platinum	21.50	1343.8

WEIGHTS

	cubic inch of Cast Ironweighs		pounds pounds
1	cubic inch of Water weighs	0.036	pounds
	U. S. Gallon weighs	- 00121 TREETER VEV	pounds
	U.S. Gallon equals	the Court State of the Court State Court State of the Court State of t	
	Imperial Gallon equals		
1	cubic foot of Water equals	7.480	U.S. gals.
	pound of Steam equals		
1	pound of Airequals	13.817	cubic feet

BOILING POINTS OF VARIOUS FLUIDS

			Degrees
Water, Atmospheric Pressure			. 212
Alcohol			
Sulphuric Acid			. 240
Refined Petroleum			
Turpentine			. 315
Sulphur			. 570
Linseed Oil			. 597
MELTING POINTS OF DIFFEREN	T	MET	AIS
meaning of on one and			

1.4																	I	De	grees
Aluminum								 							i.			. 1	1400
Antimony							 				4								810
Bismuth																			476
Brass																			1900
Bronze	0.0			0					0					9					
Copper																			
Glass																			
Gold (pure)																			
Iron (cast)																			
Iron (wrought)		4	 *			+			+	2	*	*			4			. 4	2912
Lead			 -		·			 											608
Platinum																			
Silver (pure)																			
Steel																			
Tin																			
Zinc																			
Note—Ab																			

Note—Above information is quoted from standard authorities. Not guaranteed.

TABLE OF EQUIVALENT TEMPERATURE FOR TESTING A HEATING PLANT AT DIFFERENT OUTSIDE TEMPERATURES

For the purpose of indicating the efficiency of the apparatus for any specified condition, Prof. Carpenter gives the following table, which has been generally accepted as the standard test.

For steam, the Radiator temperature in all cases is assumed to be that due to a pressure of 3 lbs. at the

boiler, or about 220 degrees Fahr.

For water, the Radiator temperature is assumed in all cases to be at an average of 160 degrees Fahr.

For a plant proportioned sufficiently to maintain a temperature of 70 degrees when the outside temperature

is at zero.

Temperature of Outside Air	Room Should be raised to	Temperature of Outside Air	Room should be raised to	Temperature of Outside Air	Room should be raised to
-10	64.7	30	86.5	70	110.5
0	70.0	40	93.1	80	117.1
10	75.1	50	98.7	90	123.5
20	81.0	60	104.7	100	130.3

TABLE SHOWING EXPANSION OF WROUGHT IRON PIPE

Initial	Increase in length per 100 feet when heated to													
Temperature	160°	180°	200°	212°	228°	240°	250°	259°	267°	274°				
Zero. in	1.28 1.02 .77	1.44 1.18 .93	1.60 1.34 1.09	1.69 1.43 1.18	1.82 1.56 1.31	1.92 1.66 1.41	2.00 1.74 1.49	2.07 1.81 1.56	2.13 1.87 1.61	2.20 1.94 1.69				
		Hot Wat	er	Boiling Water	bs.	10 lbs.	15 lbs.	20 lbs.	25 lbs.	30 lbs.				

Wrought iron pipe expands, in inches, per 100 feet, 4-5 of the increase in temperature of steam or water it is subjected to, over the temperature at the time of installation, divided by 100.

Example—Temperature when installed, 32°, 10 lbs. pressure = 240°, difference 208°, 4-5 of which equals

1 66-100 inches expansion per 100 feet.

MOISTURE ABSORBED BY AIR

Maximum (100 Per Cent.) Saturation

Temperature	Lbs. in	Grains in	Temperature	Lbs. in	Grains in
Fahrenheit	1000 Cu. Ft.	One Cu. Ft.	Fahrenheit	1000 Cu. Ft.	One Cu. Ft.
-20	.0313	. 2191	75	1.3366	9.3562
-10	.0510	. 3570	77	1.4230	9.9610
— 5	.0643	. 4501	80	1.5619	10.8333
0 5	.0806	. 5642	85	1.8194	12.7358
5	.1007	. 7049	90	2.1130	14.7910
10	.1247	.8729	95	2.4463	17.1243
15	.1536	1.0752	100	2.8237	19.7559
20	. 1887	1.3209	105	3.2501	22.7507
25	.2301	1.6107	110	3.64	25.5
30	.2797	1.9579	115	4.28	30.
32	.3019	2.1133	130	6.00	42.5
35	.3380	2.3660	140	8.28	58.
40	.4070	2.8490	157	12.10	85.
45	.4877	3.4139	170	16.00	112.
50	. 5623	4.0761	179	19.7	138.
52	. 6246	4.3722	188	23.7	166.
55	.6927	4.6489	195	27.7	194.
57	.7414	5.1898	212	37.8	265.
60	8206	5.7442	1975	23.35	
62	.8774	6.1418			
65	.9689	6.7823			
67	1.0344	7.0240			
70	1.1400	7.9800			
72	1.2154	8.5078			

RULES RELATIVE TO THE CIRCLE, SQUARE, AND TRIANGLE

To Find Circumference

Multiply diameter by 3.1416, or divide diameter by 0.3183.

To Find Diameter

Multiply circumference by 0.3183, or divide circumference by 3.1416.

To Find Radius

Multiply circumference by 0.15915, or divide cirumference by 6.28318.

To Find Side of an Inscribed Square

Multiply diameter by 0.7071, or multiply circumference by 0.2251, or divide circumference by 4.4428.

To Find Side of an Equal Square

Multiply diameter by 0.8862, or divide diameter by 1.1284, or multiply circumference by 0.2821, or divide circumference by 3.545.

Square

A side multiplied by 1.1442 equals diameter of its circumscribing circle.

A side multiplied by 4.443 equals circumference of its circumscribing circle.

A side multiplied by 1.128 equals diameter of an equal circle.

A side multiplied by 3.547 equals circumference of an equal circle.

Square inches multiplied by 1.273 equals circle inches of an equal circle.

To Find the Area of a Circle

Multiply circumference by one-quarter of the diameter, or multiply the square of diameter by 0.7854, or multiply the square of circumference by 0.7958, or multiply the square of ½ diameter by 3.1416.

To Find the Surface of a Sphere or Globe

Multiply the diameter by the circumference, or multiply the square of diameter by 3.1416, or multiply four times the square of radius by 3.1416.

The Area of any Triangle equals one half the product of the base and perpendicular.

VELOCITY OF AIR DUE TO PRESSURE

Temperature 50° Fahrenheit

Pressure in Ounces per sq. in.	in Feet,	Velocity in Feet, per Minute	Pressure in Ounces per sq. in.	in Feet.	Velocity in Feet, per Minute	Pressure in Ounces per sq. in.	in Feet,	Velocity in Feet, per Minute	Pressure in Ounces per sq. in.	in Feet,	Velocity in Feet, per Minute
1/8	30.47	1,828.4	21/4	128.70	7,722.2	43/4	186.03	11,161.5	12 $12^{1}/2$ 13 $13^{1}/2$ 14 $14^{1}/2$ 15 $15^{1}/2$ 16 $16^{1}/2$ 17 $17^{1}/2$ 18 $18^{1}/2$ 19 $19^{1}/2$ 20	291.30	17,478.2
1/4	43.08	2,585.0	23/8	132.20	7,931.8	5	190.76	11,445.5		297.01	17,820.6
3/8	52.75	3,165.1	21/2	135.59	8,135.7	51/4	195.37	11,722.0		302.59	18,155.2
1/2	60.90	3,653.8	25/8	138.91	8,334.4	51/2	199.86	11,991.5		308.04	18,482.4
5/8	68.07	4,084.0	23/4	142.14	8,528.3	53/4	204.25	12,254.8		313.38	18,802.7
1/8	74.54	4,472.6	27/8	145.29	8,717.6	6	208.53	12,511.9		318.61	19,116.3
1 1/8	80.50	4,829.7	31/4	148.38	8,902.8	61/2	216.82	13,009.3		323.73	19,423.6
1 1/4	86.03	5,161.7	33/8	151.40	9,084.0	7	224.77	13,486.4		328.75	19,725.0
1 1/8	91.22	5,473.4	31/4	154.36	9,261.5	71/2	232.42	13,945.4		333.68	20,020.7
1 1/8	96.13	5,768.0	33/8	157.26	9,435.4	8	239.80	14,387.9		338.51	20,310.8
1 1/8	100.80	6,047.9	33/4	160.10	9,606.1	81/2	246.92	14,815.4		343.26	20,595.8
1 1/8	105.25	6,315.2	33/8	162.89	9,773.3	9	253.83	15,229.6		347.93	20,595.8
1 1/8	109.52	6,571.3	33/8	165.63	9,938.0	91/2	260.52	15,631.0		352.52	21,151.0
1 1/8	113.64	6,817.6	33/8	168.33	10,099.6	10	267.00	16,020.4		357.03	21,421.6
1 1/8	117.58	7,055.0	33/8	170.98	10,258.6	101/2	273.32	16,399.3		361.46	21,687.8
2 1/8	121.41	7,284.4	4 1/4	176.15	10,568.8	11	279.70	16,768.1		365.83	21,949.7
2 1/8	125.11	7,506.7	4 1/2	181.16	10,869.5	111/2	285.46	17,127.6		370.13	22,207.5

USEFUL INFORMATION

Water Boils in open vessel, atmospheric pressure, sea level at 212°.

Water Boils in vacuum at 98°. Hence resultant vapor is 98°.

Water Expands in heating from 39° to 212°, one twenty-third or about four per cent. in bulk.

Water has greatest density or occupies least space at 39° Fahr.

A Cubic Inch of Water evaporated at atmospheric pressure (14.7 lbs.) makes, approximately, one cubic foot of steam.

Multiplying the Height of a Column of Water by .434 gives pressure in pounds.

Water in Circulation is the best known absorbent of heat, and gives out more heat in cooling through a given range of temperature than any known substance.

An Imperial Gallon of water weighs 10 pounds.

A U.S. Gallon of water weighs 8.3356 pounds at 62° Fahr., and contains 231 cubic inches.

A Cubic Foot of water weighs 621/2 pounds.

A Hundred Square Feet of radiation contains approximately 15 gallons of water.

Heat Unit, known as British Thermal Unit, or B. T. U. raises temperature of one pound of water 1°.

A U. S. Gallon is 16th less than an Imperial gallon.

Heat Unit. One B.T.U. will raise 1 cubic foot of air 50° or 50 cubic feet of air 1°. To be exact, 48.77 cubic feet.

Heat Unit. 966 heat units will evaporate one pound of water at 212° into steam.

Heat Unit. A pound of anthracite coal contains theoretically 14,500 heat units.

Heat Unit. A pound of anthracite coal in the actual burning emits between 8,000 and 9,000 heat units only.

Heat Units emitted per hour by a square foot of cast iron radiation, under favorable conditions: Hot Water Radiators 1.5 per degree of difference between the temperature of the radiator and surrounding air. Steam Radiators emit approximately 1.8 heat units per degree difference per hour.

Doubling the Diameter of a pipe increases its capacity four times.

A Ton of Hard Coal occupies a space equal to 37 cubic feet.

A Ton of Soft Coal occupies a space equal to 40 cubic feet.

A Ton and a Half Hard Coal to a hundred square feet water radiation, or to fifty sq. feet steam radiation is the estimated fuel consumption for the winter's firing in Eastern Canada. Western Canada requires 1/3 more.

A Square Foot of "Safford" Radiation weighs approximately seven pounds.

CHIMNEY FLUES

Probably no other single source is responsible for so many failures in heating as defective chimneys. It should always be borne in mind and emphasized with every prospective customer that no boiler has a draft. The draft of the boiler depends entirely upon the chimney flue, and the better the chimney, all other conditions being equal, the more successful the working of the entire apparatus.

The size and height of chimney absolutely limit the size of boiler that can be used. To illustrate: for general residence work the manufacturer assumes that the average chimney will have a height above the ground of from 30 to 40 feet, and in his catalogue he gives the size of smoke pipe which he recommends for a given size of boiler. Now, assuming that the required boiler has a 10 inch smoke collar, it is manifestly improbable that satisfactory results can be obtained if that boiler is connected to a flue with an interior dimension of 5"x12" or 8"x8". The house owner may be entirely correct when he affirms that "the flue always had a good draft," or that "it worked with a furnace," or such similar statements. The fact remains that it is impossible to successfully compress the products of combustion that require 78 square inches area into an area of 60 to 64 square inches.

The heating contractor should personally satisfy himself that the chimney flue meets all the conditions required, and has a clear area equal or exceeding that of the smoke pipe recommended by the manufacturer for the proposed heater, or else he should decline the job.

Do not write the manufacturer asking why a boiler does not work unless these conditions are fulfilled.

Chimney flues for heating apparatus should be ample in size and carried as nearly straight as possible from a point near the cellar floor to above the highest projection of the roof. They should be independent, having no connection with other flues or openings, and always of the same area from top to bottom. See illustrations, page 288.

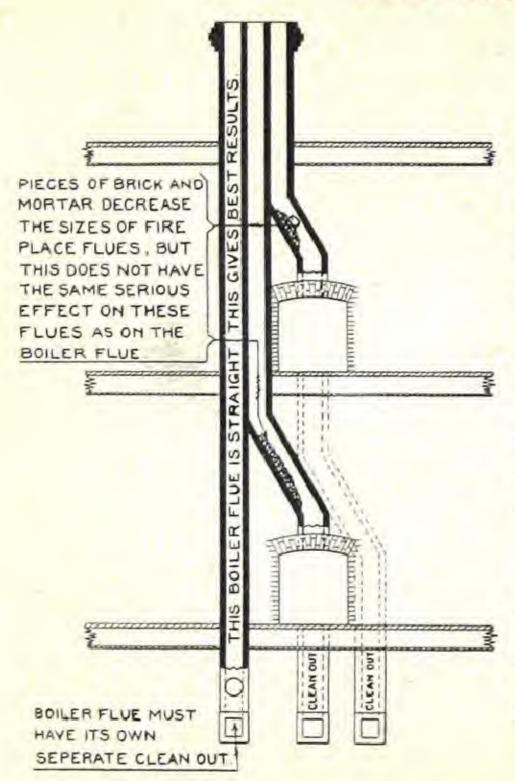
CHIMNEY FLUES

For the reason that local conditions must of necessity govern the size and height of chrisney, a great deal depends upon the judgment of the heating engineer, and it would be impossible to apply the same rule in every instance. Professor William Kent gives a formula
which is approved by Professor R. C. Carpenter, and from which has been compiled the following table, which we believe heating engineers will find of material assistance when considering
chimney flue. This table gives the diameter of round chimneys in inches for various heights.
Square chimneys with sides equal to the diameter are considered equivalent

Height of Chimney in Feet

	1.00	41 431111					
*Square Feet Rated Boiler. Capacity	*Square Feet Rated Boiler Capacity	30	10	50	60	50	106
250	375	7.0		2.3			
500	750	9.2	8.8	8.2	90		
750	1,125	10.8	10.2	39 16-	0.0	5.5	N 10
1,000	1,500	12 0	11.4	10.8	10.5	10.0	9 5
1,500	2,250	14.4	13.4	12.8	12.4	11.5	11 2
2,000	3,000	16 3	15 2	14.5	14 31	13-2	12 6
3,000	4,500	18.5	18.2	17.2	16.19	13.8	15.0
4,000	6,000	22.2	20 8	10.6	10 0	17.8	17 0
5,000	7,500	24.6	23 0	21.6	21.0	10 4	18 6
6,000	9,000	26 8	25 0	23.4	22.8	21 2	20 2
7,000	10,500	28.8	27.0	25.5	24 4	23 0	21.0
8,000	12,000	30.6	28.6	26 8	26 0	24 2	23 3
9,000	13,500	32 4	30.4	28 4	27.4	25 W	24 4
10,000	15,000	34.0	32.0	30.0	28.6	27.0	25 4

^{*}Indirect radiation should be made equivalent to direct radiation by adding 50 per cent.

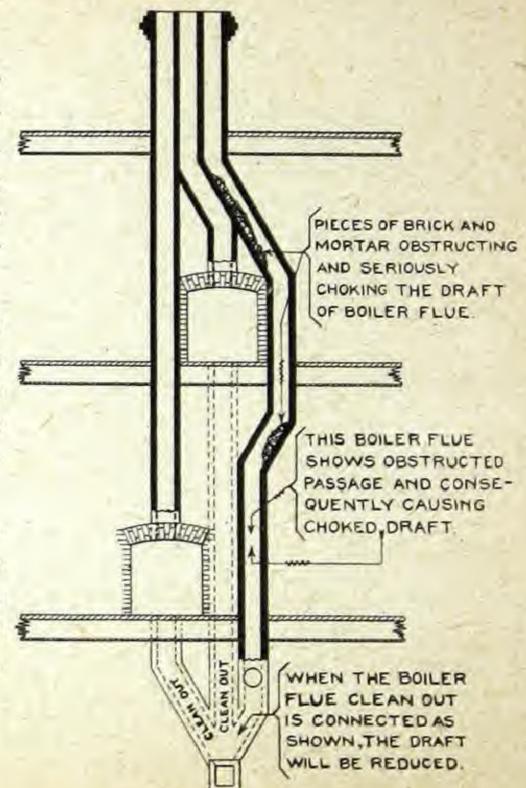


CHIMNEY FLUES

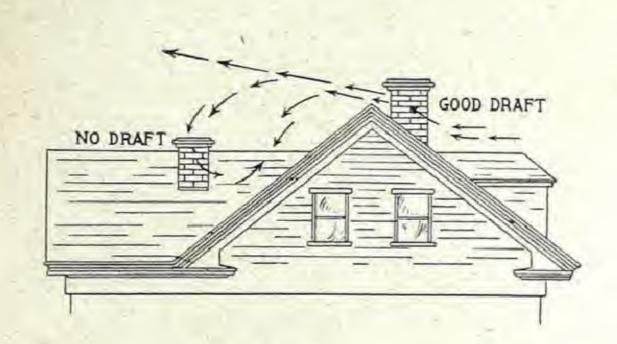
First—See that there are no other openings into the boiler flue, either above or below the boiler smokepipe, special care being exercised at the base of the flue that the boiler flue does not connect with the other flues through the soot pocket.

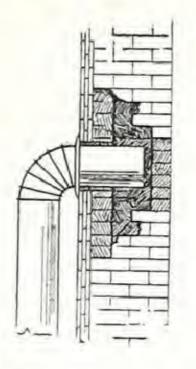
Second—See that the division walls of the chimney, if it contains more than one flue, are carried up to top of the chimney, so that each flue is independent of the others throughout its entire length.

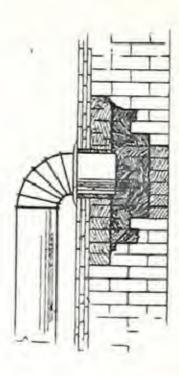
Third—That the area of the chimney flue is maintained full size throughout its entire length, and is free from all obstructions, such as loose brick, mortar, etc., that might have become lodged in it.



CHIMNEY FLUES

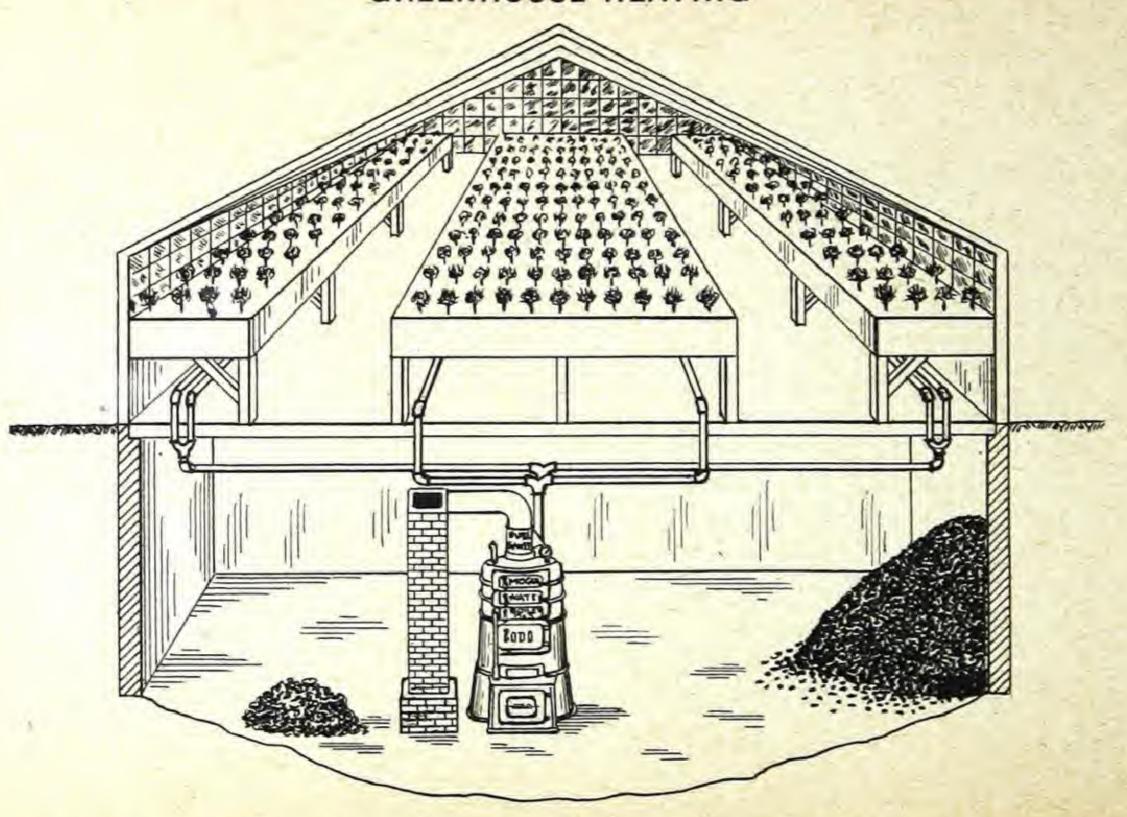






Fourth—That chimney extends above the highest point of the roof or other immediate surrounding elevation. This is quite important, and failure to observe same may be looked to as cause for poor draft. See illustration above. Fifth—That the smoke-pipe does not project into chimney too far, and thus lessen the area of flue at this important point, where the smoke leaves pipe and enters flue. See illustration above.

HEATING DATA AND USEFUL INFORMATION GREENHOUSE HEATING



GREENHOUSE HEATING

While Greenhouses may be satisfactorily heated with Steam, Hot Water is generally preferred because of its ability to store large quantities of heat, and in case the fires are neglected or go out, this stored heat is given off gradually, and by preventing a sudden fall in temperature protects the plants from injury.

Table of Amounts of Radiating Surface Necessary to Heat a Given Amount of Glass Exposure to Various Temperatures in Zero Weather.

Square Ft. of Glass Exposure	No. 6	of Square Fe	STEAM eet of Radia 50°	tion Require	d at	Square Ft. of Glass Exposure	No. o		OT WATE eet of Radia		ed at
25	2 7-9	3 1-8	3 4-7	4 1-6	5	25	4 1-6	5	6 1-4	7 1-7	8 1-3
50	5 5-9	6 1-4	7 1-7	8 1-3	10	50	8	10	13	14	16
75	8	9	10	13	15	75	13	15	19	21	25
100	11	13	14	17	20	100	17	20	25	29	33
200	23	25	30	33	40	200	33	40	50	57	67
300	34	38	43	50	60	300	50	60	75	86	100
400	45	50	57	67	80	400	67	80	100	114	133
500	56	63	72	83	100	500	83	100	125	143	167
1000	112	125	143	167	200	1000	167	200	250	286	333
2000	223	250	286	333	400	2000	333	400	500	572	667
3000	334	375	429	500	600	3000	500	600	750	857	1000
4000	445	500	571	667	800	4000	667	800	1000	1143	1333
5000	556	625	714	833	1000	5000	833	1000	1250	1429	1667
10000	1112	1250	1429	1667	2000	10000	1667	2000	2500	2857	3333
20000	2223	2500	2857	3333	4000	20000	3333	4000	5000	5714	6667

For poorly constructed houses add 10 per cent. to the above amounts.

For 10 degrees below zero multiply feet* radiation by 1.11. For 20 degrees below zero multiply feet* radiation by 1.23.

For 30 degrees below zero multiply feet* radiation by 1.35. For 40 degrees below zero multiply feet* radiation by 1.48.

Do not use Asphalt or Tar Paints in a Greenhouse. They will injure the plants. Paint pipes with lampblack and boiled oil thinned with

A most important part of a greenhouse is its chimney. This should be of brick or tile and of ample size, and should never be less than twenty-five feet high.

HEATING WATER IN TANKS AND POOLS

Size of Heater

In specifying heaters for any given capacity be sure to see that one is provided that will burn the fuel economically. If the heater is too small, the fire will have to be forced and a large percentage of the heat will escape up the chimney.

Many mistakes are made and much disappointment occasioned by not carefully considering the actual power needed to heat water. We give herewith some information that will be useful in estimating the power

required.

Horse-Power Required

One boiler horse-power is equal to the work of evaporating 34½ pounds of water from 212 degrees—to steam at 212 degrees. As it takes 966 British thermal units to evaporate one pound of water from 212 degrees

to steam, it follows the evaporation of 341/2 pounds is equal to 33,327 B. T. U.

One U.S. gallon of water weighs (at 42 degrees) 8.33 lbs., therefore it takes 833 B.T.U. to heat one gallon 100 degrees; or, it will take 83,300 B.T.U. to heat 100 gallons and 833,000 to heat 1,000 gallons from 42 degrees to 142 degrees Fahrenheit, or from any other temperature at which the water may be to a point 100 degrees higher.

As 33,327 B.T.U. is equal to one horse-power, and the work of heating 1,000 gallons equals 833,000 B.T.U., we see by dividing the one into the other that heating 1,000 gallons per hour is equal to practically twenty-five horse-power.

Fuel Needed to Heat Water

The amount of heat in anthracite coal varies from 12,000 to 14,000 B.T.U. per pound, but the average will be about 12,500 B.T.U., which is the amount we assume in these calculations.

When burning coal in Safford Water Heaters, about 70 per cent. of the heat generated can be transmitted

to the water which is being circulated through the heater.

As shown in a previous paragraph it requires 833,000 B.T.U. to raise the temperature of 1000 gallons of

water 100 degrees Fahrenheit.

If we transmit 70 per cent. of the value of the fuel to the water (and as 70 per cent. of 12,500 equals 8,750 B.T.U.) for every 1,000 gallons heated 100 degrees Fahrenheit, we must burn 95 pounds of coal.

PROPORTIONING RADIATION

There are many different rules for the proportioning of radiation, but owing to the widely varying conditions pertaining to heating installations, many of them are of little value—not much better than a rule of thumb, and serve but for more or less indifferent checking.

Where large buildings especially are to be heated, the services of a thoroughly trained and competent Heating Engineer should be secured to proportion radiation.

We append herewith several rules.

Mills and Baldwin's well-known Rules for the proportioning of radiation for steam heating are better known to the old time steam-fitter, and are a more or less guide when the outside temperature is zero or above, and the sizes of rooms and the general conditions are normal.

The Glass and Wall Rule, while fairly reliable for normal conditions at zero, is useless for rooms in which the amounts of glass and exposed wall are abnormal.

We recommend the use of the Heat Transmission Rule only. It provides for a range of temperatures any degree above zero to any degree below. Because of lack of space, we start at 20 above and stop at 20 degrees below. Intelligently used, and making a slight allowance for northerly exposed rooms over southerly ones, it will be found satisfactory and reliable.

PROPORTIONING RADIATION-STEAM HEATING

Mills' Rule

A very popular and easily remembered formula is the well known Mills' 2-20-200 Rule (Western Canada 2-10-200), in which the total amount of steam radiation required is obtained as follows:—

Note.—This rule does not work out well in the case of halls or rooms having less than ordinary amounts of wall and glass surface, where the opening and closing of outside doors changes the air frequently. In such cases the radiation should be increased 20% or over.

Baldwin's Rule

Another much used formula which is applicable to varied outside and inside temperatures: Inside temperature—outside temperature

Steam temperature—inside temperature for each square foot of glass or its equivalent in wall surface. And 10 square feet wall surface is assumed to equal 1 square foot of glass. Then add 20% for leakage through doors or windows.

With zero outside and 70 degrees inside this rule reduces to very simple proportions, viz.: $\frac{70^{\circ}-0^{\circ}}{-----} = \frac{1}{2} \text{ nearly.}$

 $\frac{1}{212^{\circ}-70^{\circ}} = \frac{1}{142} = \frac{1}{2}$ near

Then the total square feet of equivalent glass surface $\div 2+20\% = \text{sq.}$ ft. of steam radiation.

A careful analysis of this rule will show that it reaches almost exactly the same result as the Mills Rule at 70°.

PROPORTIONING RADIATION

Glass and Exposed Wall Rule

For Figuring Radiation for Heating with Hot Water

FOR WATER

-	_									SQU.	ARE	FE	EIE	AFC	SEL	GL	ASS									
	10	4	8	12	16	20 25 30 35 38 42 47 50 55 59 64 69 72 75 80 83 88 92 97	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80	84	88	92	96	100
	40	8	13	17	22 25	25	30	35 38	38 42	42 47	47	50	55 59	59	64 69	69	72 75	75	80	83	88	92	97	100	105	108
- 1	80	13	17	17 22 25 30 35	25	30	35	38	42	47	50	55	59	64	69	72	73	80	83	88	92	97	100	105	108	114
- 1	120	17	22	25	30	35	38	42	47	50	55	59	64	69	72	75	80	83	88	92	97	100	105	108	114	117
	160	22	22 25 30	30	35	38	42	47	50	55 59	59 64	64 69	69	69 72 75	75	80 83	83	88	92	97	100	105	108	114	117 122	122
E	200	25	30	30	38	42	47	50	55	59	64	69	72	20	80	83	80 83 88 92	92	97	100	105	108	114	117	126	126 130
0	240	30	35	38	, 42	50	50	55	50 55 59 64	64	69	72	75	80	00	88 92	97	97 100	100 105	105	108 114	114 117	122	122 126	130	134
E	280 320	35 38	49	42 47	47 50	55	55 59	59 64	69	69 72	72 75	75 80	90	80 83 88	72 75 80 83 88 92	97	100	105	108	108 114	117	122	126	130	134	138
RF	360	42	38 42 47		55	50	64	69	72	75	80	83	88	92	97	100	105	108	114	117	122	126	130	134	138	142
D	400	47	50	50 55 59 64	59	64	69	72	72 75 80 83 88 92	80	80 83 88 92	88	64 69 72 75 80 83 88 92	97	100	105	108	114	117	122	126	130	134	138	142	146
S	440	50	50 55	59	64	69	72	72 75	80	80 83 88 92	88	88 92	97	100	105	108	114	117	122	126	130	134	138	142	146	150
4	480	55	59	64	69	72	72 75	80	83	88	92	97	100	105	108	114	117	122	126	130	134	138	142	146	150	155
러	520	59	64	69	72	75	80	83	88	92	97	100	105	108	114	117	122	126	130	134	138	142	146	150	155	162
2	560	64	69	72	75	80	83	83 88	92	97	100	105	108	114	117	122	126	130	134	138	142	146	150	155	162	166
>	600	69	72	75	80	83	88	92	97	100	105	108	114	117	122	126	130	134	138	142	146	150	155	162	166	171
0	640	72	69 72 75	80	80 83	88	88 92	97	100	105	108	114	117	122	126	130	134	138	142	146	150	155	162	166	171	175
ED	680	75	80	83	88	92	97	100	105	108	114	117	122	126	130	134	138	142	146	150	155	162	166	171	175	180
N	720	80	83 -88	69 72 75 80 83 88 92	92		100	105	108	114	117	122	126	130	134	138	142	146	150	155	162	166	171	175	180	184
PC	760	83	-88	92	97	100	105	108	114	117	122	126	130	134	138	142	146	150	155	162	166	171	175	180	184	189
×	800	88	92	97	100	105	108	114	117	122	126	130	134	138	142	146	150	155	162	166	171	175	180	184	189	193
E	840	92	97	100	105	108	114	117	122	126	130	134	138	142	146	150	155	162	166	171	175	180	184	189	193	197
	880	97	100	105	108	114	117	122	126	130	134	138	142	146	150	155	162	166	171	175	180	184	189	193	197	200
	920	100	105	108	114	117	122	126	130	134	138	142	146	150	155	162	166	171	175	180	184	189	193	197	200	205
	960	105	108	114	117	122	126	130	134	138	142	146	150	155	162	166	171	175	180	184	189	193	197 200	200	205 208	208 213
-	1000	108	114	11/	122	126	130	134	138	142	146	150	155	162	166	1/1	175	180	184	189	193	197	200	205	600	210

DIRECTIONS.—Figure all exposed glass surface in each room. Figure all exposed wall surface in each room. (Where interior partitions are adjoining rooms in which no heat is placed, figure one-half of such partitions.) Having found these exposures look down the side until you come to the number of feet of exposed wall surface and then looking across to the number of feet of exposed glass in that column will give the number of feet of radiation required.

PROPORTIONING RADIATION

Glass and Wall Rule

For Figuring Radiation for Heating with Direct Steam

SQUARE FEET EXPOSED GLASS

_		1 4	1 0	1 10	. 10	1 66	1.01	I oo	-			-	1.151				GLA	00								
EXPOSED WALL SURFACE	40 80 120 160 200 240 280 320 360 400 440 480 520 560 600 640 680 720 760 800 840 880 920 960 1000	4 5 8 10 13 15 18 20 23 25 28 30 33 35 38 40 43 45 48 50 53 55 58 60 63 65 65 65 65 65 65 65 65 65 65	8 10 13 15 18 20 23 25 28 30 33 35 38 40 43 45 48 50 53 55 58 60 63 65 68	12 10 13 15 18 20 23 25 28 30 33 35 38 40 43 45 48 50 53 55 58 60 63 65 68 70	16 13 15 18 20 23 25 28 30 33 35 38 40 43 45 48 50 53 55 68 70 73	20 15 18 20 23 25 28 30 33 35 38 40 43 45 48 50 53 55 60 63 65 67 73 75	24 18 20 23 25 28 30 33 35 38 40 43 45 48 50 53 55 60 63 65 68 70 73 75 78	28 20 23 25 28 30 33 35 38 40 43 45 48 50 53 55 58 60 63 65 68 70 73 75 78 80	32 23 25 28 30 33 35 38 40 43 45 48 50 53 55 58 60 63 65 68 70 73 75 78 80 83	36 25 28 30 33 35 38 40 43 45 45 53 55 63 63 65 68 73 75 78 80 83 85	40 28 30 33 35 38 40 43 45 48 50 53 55 58 60 63 65 67 73 75 78 80 83 85 88	44 30 33 35 38 40 43 45 48 50 53 55 58 60 63 68 70 73 75 78 80 83 85 88 90	48 33 35 38 40 43 45 48 50 53 55 58 60 63 65 68 70 73 75 78 80 83 85 88 90 93	52 35 38 40 43 45 48 50 53 55 58 60 63 65 68 70 73 75 78 80 83 85 88 90 93 95	56 38 40 43 45 48 50 53 55 58 60 63 65 68 70 73 75 78 80 83 85 88 93 93 98	60 40 43 45 48 50 53 55 58 60 63 65 68 70 73 75 78 80 83 85 88 90 93 95 98 100	64 43 45 48 50 53 55 58 60 63 65 68 70 73 75 78 80 83 85 88 90 93 95 98 100 103	68 45 48 50 53 55 58 60 63 65 68 70 73 75 78 80 83 85 88 90 93 95 98 100 103 105	72 48 50 53 55 58 60 63 65 68 70 73 75 78 80 83 85 88 90 93 95 98 100 103 105 108	76 50 53 55 58 60 63 65 68 70 73 75 78 80 83 85 88 90 93 95 98 100 103 105 108 110	80 53 55 58 60 63 65 68 70 73 75 78 80 83 85 88 90 93 95 98 100 103 105 108 110 113	84 55 58 60 63 65 68 70 73 75 78 80 83 85 88 90 93 95 98 100 103 105 108 110 113 115	88 58 60 63 65 68 70 73 75 78 80 83 85 88 90 93 95 98 100 103 105 108 110 113 115 118	92 60 63 65 68 70 73 75 78 80 83 85 88 90 93 95 98 100 103 105 108 110 113 115 118 120	96 63 65 68 70 73 75 78 80 83 85 88 90 93 95 98 100 103 105 108 110 113 115 118 120 123	100 65 68 70 73 75 78 80 83 85 88 90 93 95 98 100 103 105 108 110 113 115 118 120 123 125

DIRECTIONS.—Figure all exposed glass surface in each room. Figure all exposed wall surface in each room. (Where interior partitions are adjoining rooms in which no heat is placed, figure one-half of such partitions.) Having found these exposures look down the side until you the number of feet of exposed wall surface and then looking across to the number of feet of exposed glass in that column will give

PROPORTIONING RADIATION

Heat Transmission Rule

(For figuring radiation for heating by water or steam, to maintain 70 degrees inside).

	Differe	nt degree:	s of outsi	de temper	ature.
	20 above zero	above zero	zero	10 below zero	20 below zero
For 1/2 air change per hour multiply the cubic contents by:— For 1 air change per hour multiply the cubic	. 5	. 6	.7	. 8	. 9
For 1½ air change per hour multiply the cubic	1.0	1.2	1.4	1.6	1.8
For 2 air changes per hour multiply the cubic	1.5	1.8	2.1	2.4	2.7
Multiply the exposed glass by:— Multiply the exposed wall by:—	2.0 50 17	$\begin{array}{c} 2.4 \\ 65 \\ 20 \end{array}$	$\frac{2.8}{75}$	3.2 85 27	3.6 95 30

Use the co-efficient for 1/2 air change for rooms only requiring tempering.

"" " bedrooms.

"" living rooms.

"" halls, bath and exposed rooms.

Add the results thus obtained and divide by 160, and the result will be the square feet of direct Hot Water radiation required to heat the room.

Add the results thus obtained and divide by 250, and the result will be the square feet of direct Steam radiation required to heat the room.

PROPORTIONING RADIATION

Heat Transmission Rule

Example.—Consider a living room 14 x 15 exposed on two sides and having a 10 foot ceiling. The room has 60 square feet of glass and 230 (net) square feet of exposed wall. To find the correct amount of radiator surface to maintain 70 degrees inside when the outside temperature is at zero.

Cubic contents	2,100x2.1 60x75		4,410 4,500
Wall, square feet	230x25	-	14.660

14,660 divided by 160=91 sq. ft. of direct hot water radiation.
14,660 divided by 250=58 sq. ft. of direct steam radiation.

VENTILATION

For school rooms, it is standard practice to supply 30 cubic feet of fresh warmed air per child per minute, or 1,800 cubic feet of air per child per hour. True it is an average child will consume only about 18 cubic feet of air per hour, but as each foot of vitiated air contaminates and renders unfit for breathing 100 cubic feet of air, it follows that the standard requirement of 1,800 cubic feet of air per child per hour is correct.

A school room having 40 pupils should therefore be provided with 72,000 cubic feet of air per hour.

The term "B.T.U." is the scientific name used for the measurement of heat. One "B.T.U." is the equivalent of 788 foot pounds of work.

In the raising of the temperature of air, it is conceded that 1.6 B.T.U. will raise 1 cubic foot of air 80 degrees.

Using the preceding data, it will thus be found that to raise 72,000 cubic feet of air 80 degrees, 115,200 B.T.U. will be required, or for a ten-roomed school, containing 400 pupils, 1,152,000 B.T.U. will be required.

It is conceded that one square foot of Safford Cast Iron Hot Blast Radiation, will give off an average of 1,500 B.T.U. per hour, working under normal school conditions, so that 765 square feet of Hot Blast Radiation will thus be required for the heating of the air required for ventilation for the said school.

It is customary to figure on the air passing through the Heater at 1,300 lineal feet per minute, or 78,000 lineal feet per hour, and therefore, in proportioning the sizes of the Heaters, it would be necessary to select Heaters with a free area space of not less than 10 square feet. In practice it will be found that to get sufficient radiation distributed in, say, four stacks, a greater free area will be provided, and slightly greater or less amount of radiation. For instance, working out the above example, we find it will require:—

4 stacks of 140" Hot Blast Radiators, having 18 sections each, in all 774 square feet of radiation with a free area of 11.16 square feet.

Or 4 stacks of 50" Hot Blast Radiators, having 14 sections each, in all 756 square feet of radiation with a free area of 10.76 square feet.

Or 4 stacks of 60" Hot Blast Radiators, having 13 sections each, in all 768 square feet of radiation with a free area of 11.05 square feet.

INDIRECT RADIATOR HEATING

Free Area Through Registers

For Calculating Air Passage in Indirect or Hot-Blast Heating

Register	Free Area in	Register	Free Area in	Register	Free Area in	Register	Free Area in
Opening	Square Feet	Opening	Square Feet	Opening	Square Feet	Opening	Square Feet
8 x 8 8 x 10 8 x 12 9 x 12 10 x 10 10 x 12 10 x 14 10 x 16 10 x 18 10 x 20 10 x 22 10 x 24 12 x 12 12 x 14 12 x 15 12 x 16 12 x 18 12 x 18 12 x 24	0.30 0.37 0.44 0.56 0.46 0.56 0.65 0.74 0.83 0.93 1.02 1.11 0.67 0.78 0.83 0.93 1.02	14 x 14 14 x 16 14 x 18 14 x 20 14 x 22 16 x 16 16 x 18 16 x 20 16 x 22 16 x 24 16 x 24 16 x 28 16 x 30 16 x 32 16 x 36 18 x 18 18 x 18 18 x 20 18 x 21	0.91 1.04 1.17 1.30 1.43 1.19 1.33 1.48 1.63 1.78 2.07 2.22 2.37 2.67 1.50 1.67 1.75	18 x 24 18 x 27 18 x 30 18 x 36 20 x 20 20 x 22 20 x 24 20 x 26 20 x 28 20 x 30 20 x 32 20 x 36 24 x 24 24 x 27 24 x 30 24 x 32 4 x 36	2.00 2.25 2.50 3.00 1.85 2.04 2.22 2.41 2.59 2.77 2.96 3.33 2.67 3.00 3.33 3.55 4.00	27 x 27 27 x 38 28 x 28 28 x 30 28 x 32 28 x 36 30 x 36 30 x 36 30 x 42 30 x 48 36 x 40 36 x 42 36 x 48 38 x 38 38 x 40 38 x 42	3.37 4.75 3.63 3.88 4.15 4.66 4.17 5.00 5.83 6.67 6.00 6.67 7.00 8.00 6.67 7.03 7.38

PIPES AND AREAS FOR INDIRECT HEATING

The following table will provide quick calculations for all cases of indirect heating for residences or any moderate-sized Steam or Water-heating outfit:—

Dimensions of Pipe	Area in Square Inches	Size of Register Required	Dimensions of Pipe	Area in Square Inches	Size of Register Required
8 inches	50	8 x 12	16 inches	201	18 x 24
9 ''	63	9 x 14	18 "	254	20 x 26
10 ''	78	10 x 16	20 "	314	24 x 27
12 ''	113	14 x 16	22 "	380	24 x 32
14 ''	154	16 x 20	24 "	452	30 x 30

VOLUME AND DENSITY OF AIR

PROPERTIES OF AIR

at Various Temperatures

1					Laborate Sales		35			
Temp. Degrees Fahr.	Volume of 1 lb. of Air at Atmos- pheric Pressure of 14.7 lbs. Cubic Feet	Density or Weight of 1 Cu. Ft. of Air at 14.7 lbs. Pressure	Degrees Fahr,	Volume of 1 lb. of Air at Atmos- pheric Pressure of 14.7 lbs. Cubic Feet	Density or Weight of 1 Cu. Ft. of Air at 14.7 lbs. Pressure	Temp. Degrees Fahrenheit	Dry Air per	B.T.U. absorbed by 1 Cubic Foot Saturated Air per Degree Fahr.	I Degree per	Cubic Feet Saturated Air warmed 1 Degree pe B.T.U.
0 32 40 50	11,583 12,387 12,586 12,840	0.086331 0.080728 0.079439 0.077884	210 212 220 240	16,860 16,910 17,111 17,612	0.059313 0.059135 0.058442 0.056774	12 22 32 42 52	0.02056 0.02004 0.01961 0.01921 0.01882 0.01847	0.02054 0.02006 0.01963 0.01924 0.01884 0.01848	48.5 50.1 51.1 52.0 53.2 54.0	48.7 50.0 51.0 51.8 52.8
62 70 80 90 100	13.141 13.342 13.593 13.845 14.096	0.076097 0.074950 0.073565 0.072230 0.070942	260 280 300 320 340	18,116 18,621 19,121 19,624 20,126	0.055200 0.053710 0.052297 0.050959 0.049686	60 62 70 72 82	0.01818 0.01811 0.01777 0.01771 0.01744	0.01822 0.01812 0.01794 0.01790 0.01770	55.0 55.2 56.3 56.5 57.2	53.8 54.6 54.7 55.5 55.8 56.5
120 140 160 180 200	14.592 15.100 15.603 16.106 16.606	0.068500 0.066221 0.064088 0.062090 0.060210	360 380 400 425 450	20,630 21,131 21,634 22,262 22,890	0.048476 0.047323 0.046223 0.044920 0.043686	92 100 102 112 122	0.01710 0.01690 0.01682 0.01651 0.01623	0.01751 0.01735 0.01731 0.01711 0.01691	58.5 59.1 59.5 60.6 61.7	57.1 57.8 57.8 58.5 59.1
						132 142 152 162 172 182	0.01596 0.01571 0.01544 0.01518 0.01494 0.01471	0.01670 0.01652 0.01634 0.01616 0.01598 0.01580	62.5 63.7 65.0 66.2 67.1 68.0	59 9 60 6 61 5 62 4 63 3 64 2
						192 202 212	0.01449 0.01426 0.01406	******	68.9 69.5 71.4	4790

HEAT VALUES

And cost of heating by Electricity and Gas, as compared with Anthracite Coal.

Electricity.—The heating value of one Kilowatt hour is approximately 3,400 B.T.U.—therefore at 4 cents per Kilowatt hour, one cent will purchase 850 B.T.U.

At \$7.50 per ton hard coal, making available about 8,000 B.T.U. per pound, one cent will purchase 21,000 B.T.U. At this rate it would cost twenty-four and seven-tenths as much to heat with electricity as with coal.

Gas.—The heat value of one cubic foot of artificial gas for heating purposes is about 600 B.T.U. At 70c. per 1,000 cubic feet, one cent would purchase 8,571 B.T.U.

With coal at \$7.50 per ton, it will cost two and four-tenths times as much to heat with gas as with hard coal.

HEAT VALUE AND COMPOSITION OF VARIOUS FUELS

TENSILE STRESS OF BOLTS

Name of Combustible		Compo	osition		Calo- rific	Diam. eter of	Area at Bottom	At 7,000	At 10,000	At 12,000	At 15,000	
	Carbon	Hydro- gen	Volatile Matter	Ash	Power B. T. U.	Bolts in Inches	of Thread	lbs. per Sq. In.	lbs. per Sq. In.	lbs, per Sq. In.	lbs. per Sq. In.	Sq. In.
Carbon	1.00 0.90 0.85 0.70	0.03 0.05 0.05	0.03 0.06 0.20	0.01 0.06 0.05	14,400 13,500 14,400 11,700	1/2 5/8 3/4 7/8	.126 .202 .302 .420	882 1,414 2,114 2,940	1,250 1,960 3,000 4,200	1,512 2,424 3,624 5,040	1,875 2,940 4,500 6,300	2,500 3,920 6,000 8,400
Peat	0.55 0.39 0.85 0.82	0.05 0.04 0.05	0.30	0.10 0.07 0.10 0.18	9,000 7,200 12,600 9,000	1 11/8 11/4 13/8	.550 .694 .893 1.057	3,850 4,858 6,251 7,399	5,500 6,900 7,800 10,600	8,328 10,716 12,684	8,250 10,350 11,700 15,900	11,000 13,800 15,600 21,200
Dry Wood	0.48 0.40 0.80	0.06 0.05	0.05 0.25 0.04	0.01 0.01 0.07	7,200 5,400 10,800 62,000	$\frac{1\frac{1}{2}}{1\frac{5}{8}}$ $\frac{1\frac{3}{4}}{1\frac{7}{8}}$	1,295 1,515 1,716 2,051	9,065 10,605 12,222 14,357	12,800 15,300 17,600 20,300	15,540 18,180 20,952 24,612	19,200 22,950 26,400 30,450	25,600 30,600 35,200 40,600
Carbonic Oxide Illuminating gas Gas from blast-furnace	0.43 0.62 0.06	0.21 0.02	0.57 0.17 0.92		4,320 18,000 1,620	2 21/4 21/2	2.302 3.023 3.719	16,114 21,161 26,033	23,000 31,200 37,000	27,624 36,276 44,628	34,500 46,800 55,500	46,000 62,400 74,000

The breaking strength of good bolt iron is usually taken at 50,000 pounds per square inch, with an elongation of 15 per cent. before breaking. It should not be set under a strain of less than 25,000 pounds. The proof strain is 20,000 pounds per square inch, and beyond this amount iron should never be strained in practice.

LIST OF SIZES OF STEAM MAINS

Radiation	One-Pipe Work	Two-Pipe Work	Radiation	One-Pipe Work	Two-Pipe Worl	
1 to 30 sq. ft. 30 to 75 75 to 150 150 to 300 300 to 650 650 to 900 900 to 1250 1250 to 1600	1 inch 134 134 212 212 314	%x % inch 1 x % 1 kx1 1 kx1 2 x1 k 2 x1 k 2 x2 k 3 x2 k 3 kx3	1600 to 2050 inch 2050 to 2500 " 2500 to 3600 " 3600 to 5000 " 5000 to 6500 " 6500 to 8100 " 8100 to 10000 "	434 inch 5 " 6 " 7 " 8 " 9 "	4 x334 inch 434x4 5 x434 " 6 x5 " 7 x6 " 8 x6 "	

LIST OF SIZES OF HOT WATER MAINS

	Radiation	Radiation
50 to 125 125 to 175 175 to 300 300 to 475 475 to 700	1134 inch pipe 1134 1132 2 " 2142 " 3	700 to 950 sq. ft
Mair		Branches
1 inch will		
103		
1 -2		and 1-1 inch
31.0 Hz	Carl seed and vivil the	10
772	1 old and 1-1 M men, or.	and 1-1½ inch 2-2 and 1-1¼ inch
71.	1-2) inch and 1-1 mcn, or.	and 1-114 inch
4 14	2-479 inch of 1-3 inch and	1-2 " or 3-2 inch
412 11	1-379 Inch and 1-279 Inch, or	2-3 " or 4-2 inch
272 10	1-057 Inch and 1-0 Inch, or.	and 1-21/2 inch
9 5	1-4 inch and 1-3 inch, or.	and 1-234 inch
0		or 10-2 inch
F 40		2-4 and 1-2 inch
8	2-6 inch and 1-5 inch, or.	5-4 " and 2-2 inch

